National Aeronautics and
Space Administration

Budget Estimates

Fiscal Year
1994

Volume III
Research and Program Management

Special Analyses

Contents

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 1994 ESTIMATES

VOLUME III

TABLE OF CONTENTS

RESEARCH AND PROGRAM MANAGEMENT

Research
and
Program
Management

Summary
Information

RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1994 ESTIMATES

GENERAL STATEMENT

The Research and Program Management (R&PM) appropriation provides the salaries, other personnel and related costs and travel support for NASA's civil service workforce.

This civil service workforce is the underpinning for the successful accomplishment of the Nation's civil aeronautics and space programs. These are the people who plan the programs; conduct and oversee the research; select and monitor the contractors; manage the various research, development, and test activities; and oversee all of NASA's operations. The salaries and benefits of this workforce comprise approximately 95 percent of the requested appropriation. The remaining 5 percent of the requested appropriation is required to fund travel necessary to manage NASA and its programs, and provide the training and other supporting costs for NASA personnel.

This FY 1994 budget funds costs associated with 23,623 Full-Time Equivalent (FTE) workyears. This reflects a reduction of 608 FTE consistent with Presidential Executive Order 12839 "Reductions of 100,000 Federal Positions". In spite of the staff reductions (which will occur through attrition), the FY 1994 budget represents a 3.7 percent dollar increase over FY 1993. This increase will allow for the following: full-year funding of the civilian pay and benefit increases granted in January 1993, maintenance of training and travel at FY 1992 levels, full-year funding for promotions, within-grade increases and other personnel actions, and provision for lump sum annual leave payments due to anticipated retirements from the Senior Executive Service (SES) workforce in FY 1994. There is no pay raise budgeted in FY 1994.

NASA Field Centers report to the various Program Associate Administrators responsible for the major portion of their technical programs. The FY 1994 FTE distribution by program reflects the recent reorganization of the Office of Space Science. With the exception of the Space Station program, which is currently under review, the principal roles assigned to each Installation, based on demonstrated capabilities and capacities to meet NASA's overall program goals, are described below:

OFFICE OF SPACE FLIGHT:

Johnson Space Center (JSC) - Management, selection, and training of astronauts and mission specialists, and Shuttle Flight operations, including mission planning, operational procedures, and flight control.

Kennedy Space Center (KSC) - Management of Shuttle Launch Operations, including orbiter processing, final payload checkout and integration with the Shuttle, Shuttle launch, and post landing processing.

Marshall Space Flight Center (MSFC) - Management of the Space Shuttle Main Engine, Solid Rocket Booster, and External Tank projects; management of NASA's activities on the Spacelab project; and development and conducting of experiments in materials processing in space.

Stennis Space Center (SSC) - Space Shuttle engine testing, and Earth resources research and technology transfer.

OFFICE OF MISSION TO PLANET EARTH:

Goddard Space Flight Center (GSFC) - Development and operation of Earth orbital flight experiments and automated spacecraft to conduct scientific investigations and to demonstrate practical applications; management of tracking and data acquisition activities; management and launch of sounding rockets and balloons; operation of an instrumented flight range for aeronautical and space research and procurement of expendable launch services for small and medium payloads. The Goddard Space Flight Center has also begun development of the Earth Observing Systems (EOS) and its associated data system. The Wallops Flight Facility is an operational element and component installation of the Goddard Space Flight Center.

OFFICE OF AERONAUTICAL RESEARCH AND TECHNOLOGY:

Ames Research Center (ARC) - Conduct of activities involving computational aerodynamics and flight testing, computational/numerical simulation rotorcraft technology; short and vertical takeoff and landing technology; life sciences dealing with gravitational biology, and exobiology; human factors; autonomous systems; guidance and control; and operation of an alternate landing site for the Space Shuttle missions. The Dryden Flight Research Facility is an operational element and component installation of the Ames Research Center.

Langley Research Center (LaRC) - Conduct of airframe aerodynamics and structures research and technology; hypersonic propulsion; experimental and theoretical aerodynamics; environmental quality monitoring by remote sensing; advanced conceptual space system design independent assessments; research in the areas of structures and materials, guidance and controls; and airframe/propulsion integration of the transatmospheric research and technology program.

Lewis Research Center (LeRC) - Conduct of aeronautical propulsion, nuclear space propulsion, electric space propulsion, and space power research and technology; space communications research and technology; development of microgravity sciences for fluid physics and combustion science; and procurement of expendable launch services on intermediate and large payload vehicles.

NASA HEADQUARTERS (HQ) - Overall executive direction of NASA's programs and activities, including functional management of such areas as personnel policies and development, Equal Employment Opportunity, procurement, financial management, information resource management, logistics, etc.

5] OF ING REQUIREMENTS

The FY 1994 Budget provides the necessary resources to apply in-house capabilities to program activities. Detailed data on funding requirements are provided in the section on each Installation. A summary description of, and the funding required by the functional category includes:

I. Personnel and Related Costs (S1.623.536.000): Includes salaries and benefits, the Government's contribution to personnel benefits for NASA civil service employees, and for personnel of other Government agencies detailed to NASA. In FY 1994, the budget provides for 23,623 FTE workyears exclusive of the Inspector General. This category also includes other personnel and related costs such as, moving expenses (excluding the associated travel of people); recruiting and personnel investigation services provided by the Office of Personnel Management; and the training of NASA civil service employees.

11. Travel ($51,464,000): Includes the cost of transportation, per diem, and related travel expenses--domestic and foreign--of civil service employees who travel for coordination and management of NASA program activities including contract management; flight mission support; meetings and technical seminars and symposia; and for permanent and temporary relocations.

SUMMARY OF THE BUDGET PLAN BY FUNCTION

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
I.	Personnel and Related Costs.....	1,526,715	1,604,535	1,568,375	1,623,536
11.	Travel.....	49,141	55,492	46,639	51,464
	Total, NASA.....	1,575,856	1,660,027	1,615,014	1,675,000

SUMMARY OF CHANGES FROM THE FY 1993 BUDGET TO THE FY 1993 CURRENT ESTIMATE

The FY 1993 budget request of $1,660.0 million is revised to $1,615.0 million. The current R&PM plan includes the following changes:

FY 1993 Budget Request.....	$1,660.0
Congressional Action:	- 45.0
Project Core	- 26.0
Travel	- 2.0
General	- 17.0
FY 1993 Current Estimate.....	$1,615.0

BASIS OF THE FY 1994 ESTIMATE

The FY 1994 Budget Estimate of $1,675.0 million represents an increase of $60.0 million over the current FY 1993 R&PM plan. This increase provides for a civil service ceiling of 23,623 workyears, the full year cost of the FY 1993 pay raise, and travel consistent with increased transportation and related costs and program requirements,

The appropriation request for FY 1994, by functional category, is summarized below:

I. Personnel and Related Costs ($1,623,536,000): The FY 1994 estimate for Personnel and Related Costs is $55.1 million higher than FY 1993. Of the increase: $15.3 million is for employee benefits, to include the rising costs of health care and the increased share of government payments to the Federal Employees Retirement System; $15.3 million is for the full year cost of the FY 1993 pay raise; $15.8 million is for normal personnel actions such as promotions, within grade increases, and military detailees; and the remaining $8.7 million is for training and other support services. Included in the above is funding for anticipated annual leave lump sum payments due to anticipated retirements from the SES workforce in January 1994.

II. Travel ($51,464,0001: NASA relies very heavily on contracts with the private sector for the actual accomplishment of its programs and providing responsible oversight of these contractors requires considerable travel to the contractor locations. Additionally, the launch of a major payload on the Space Transportation System involves the integration and coordination of a very large number of people and activities. This can only be effectively accomplished by holding multiple pre-launch meetings in multiple locations. In total, program travel is approximately two-thirds of NASA's travel expenditures. The remaining travel funds are required to coordinate Agency management and administration, for professional development and training, and for the transportation of new and transferred employees to new duty stations. The FY 1994 increase in travel is intended to respond to increased travel costs and program and project management, and supervision.

In summary, the FY 1994 budget requirement of $1,675,000,000 is to provide for 23,623 FTE civil service workyears to support the activities at eight NASA Installations and Headquarters, consistent with the Research and Development; Space Flight, Control and Data Communications; and Construction of Facilities program plans.

DETAIL OF CONTENTS BY FUNCTION

I. Personnel and Related Costs

A. Compensation and Benefits:

1. Compensation:

a. Permanent Positions: This part of Personnel and Related Costs covers the salaries of the full-time permanent civil service workforce and is the largest portion of this functional category.

b. Other Than Full-Time Permanent Positions: This category includes the salaries of NASA's non-permanent workforce. Programs such as Presidential Management Interns, students participating in cooperative training, summer employment, youth opportunity, and temporary clerical support are covered in this category.

c. Reimbursable Detailees: In accordance with existing agreements, NASA reimburses the parent Federal organization for the salaries and related costs of persons detailed to NASA.

d. Overtime and Other Compensation: Overtime, holiday, post and night differential, and hazardous duty pay are included in this category. Also included are incentive awards for outstanding achievement and superior performance.

2. Benefits: In addition to compensation, NASA, as authorized and required by law, makes the employer's contribution to personnel benefits. These benefits include contributions to the Civil Service Retirement Fund, the Federal Employees Retirement System, employees' life and health insurance, payments to the Medicare fund for permanent employees, and social security contributions. Payments to the civil service retirement fund for re-employed annuitants and severance pay to former employees involuntarily separated through no fault of their own are also included.

B. Supporting Costs:

1. Transfer of Personnel: Provided under this category are relocation costs required by law, such as the expenses of selling and buying a home, subsistence expenses, and the movement and storage of household goods.

2. Investieative Services: The Office of Personnel Management is reimbursed for activities such as security investigations of new hires and revalidation of sensitive position clearances, recruitment advertising, and Federal wage system surveys.

3. Personnel Training: Training is provided within the framework of the Government Employees Training Act of 1958. Part of the training costs are for courses offered by other Government agencies, and the remainder is for training through nongovernment sources.

11. Travel

A. Proeram Travel: The largest part of travel is for direction, coordination, and management of program activities including international programs and activities. The complexity of the programs and the geographical distribution of NASA Installations and contractors necessitate this category of travel. As projects reach the flight stage, support is required for prelaunch activities including overseas travel to launch and tracking sites. The amount of travel required for flight projects is significant as it is directly related to the number of systems and subsystems, the number of design reviews, and the number and complexity of the launches and associated ground operations.

B. Scientific and Technical Development Travel: Travel to scientific and technical meetings and seminars permits employees engaged in research and development to participate in both Government sponsored and nongovernment sponsored activities. This participation allows personnel to benefit from exposure to technological advances which arise outside NASA, as well as allowing personnel to present both accomplishments and problems to their associates and provides for the dissemination of technical results to the United States community.

C. Management and Operations Travel: Management and operations travel provides for the direction and coordination of general management matters and travel .by officials to

review the status of programs. It also includes travel by functional managers in such areas as personnel, financial management, and procurement. This category also includes the cost of travel of unpaid members of research advisory committees; and initial duty station, permanent change of assignment, and related travel expenses.

CENTER LOCATIONS AND CAPITAL INVESTMENT

JOHNSON SPACE CENTER - The Lyndon B. Johnson Space Center is located 20 miles southeast of Houston, Texas. NASA owns 1618 acres of land at the Houston site and uses another 60,552 at the White Sands Test Facility, Las Cruces, New Mexico. The total capital investment including land, buildings, structures and facilities, equipment, and other fixed assets was $1,112,140,000 as of September 30, 1992.

KENNEDY SPACE CENTER - The Kennedy Space Center is located 50 miles east of Orlando, Florida. NASA owns 82,943 acres and uses facilities at Cape Canaveral Air Station and Vandenberg Air Force Base. The total capital investment including land, buildings, structures and facilities, equipment, and other fixed assets was $2,159,222,000 as of September 30, 1992.

MARSHALL SPACE FLIGHT CENTER - The Marshall Space Flight Center is located within the U.S. Army's Redstone Arsenal at Huntsville, Alabama. MSFC also manages operation at the Michoud Assembly 15 miles east of New Orleans, Louisiana and the Slidell Computer Complex in Slidell, Louisiana. The total capital investment including land, buildings, structures and facilities, equipment, and other fixed assets was $1,345,890,000 as of September 30, 1992.

STENNIS SPACE CENTER - The Stennis Space Center is located approximately 50 miles northeast of New Orleans, Louisiana. NASA owns 20,588 acres and has easements covering an additional 118,284 acres. The total capital investment including land, buildings, structures and facilities, equipment, and other fixed assets was $439,092,000 as of September 30, 1992.

GODDARD SPACE FLIGHT CENTER - The Goddard Space Flight Center is located 15 miles northeast of Washington, D.C. at Greenbelt, Maryland. NASA owns 1,106 acres at this location and an additional 6,176 acres at the Wallops Flight Facility in Wallops Island, Virginia. The total capital investment including land, buildings, structures and facilities, equipment, and other fixed assets at both locations was $1,042,910,000 as of September 30, 1992.

AMES RESEARCH CENTER - The Ames Research Center is located south of San Francisco on Moffett Field, California, and operates the Ames Dryden Flight Research Facility located 65 miles northeast of Los Angeles at Edwards Air Force Base. NASA owns 429.9 acres at the Moffett Field location. The total capital investment including land, buildings, structures and facilities, equipment, and other fixed assets at both locations was $1,265,256,000 as of September 30, 1992.

LANGLEY RESEARCH CENTER - The Langley Research Center is adjacent to Langley Air Force Base which is located between Williamsburg and Norfolk at Hampton, Virginia. NASA owns 807 acres and has access to 3,276 acres. The total capital investment including land, buildings, structures and facilities, equipment, and other fixed assets was $1,014,039,000 as of September 30, 1992.

LEWIS RESEARCH CENTER - The Lewis Research Center occupies two sites; the main site is in Cleveland, Ohio, adjacent to Cleveland-Hopkins Airport; the second site is the Plum Brook Station located south of Sandusky, Ohio, and 50 miles west of Cleveland. NASA owns 6,820 acres and leases an additional 14 acres at the Cleveland location. The total capital investment including land, buildings, structures and facilities, equipment, and other fixed assets at both locations was $710,014,000 as September 30, 1992.

NASA HEADQUARTERS - NASA Headquarters is located at Two Independence Square, 300 E St. SW, Washington, DC and occupies other buildings in the District of Columbia, Maryland, and Virginia.

DISTRIBUTION OF FULL TIME EQUIVALENT WORKYEARS BY INSTALLATION

	1992 ACTUAL	1993 BUDGET ESTIMATE	1993 CURRENT ESTIMATE	1994 BUDGET ESTIMATE
JOHNSON SPACE CENTER	3,640	3,631	3,606	3,548
KENNEDY SPACE CENTER	2,543	2,510	2,508	2,467
MARSHALL SPACE FLIGHT CENTER	3,735	3,650	3,660	3,560
STENNIS SPACE CENTER	221	216	213	211
GODDARD SPACE FLIGHT CENTER	3,988	3,985	3,954	3,894
AMES RESEARCH CENTER	2,256	2,225	2,211	2,185
LANGLEY RESEARCH CENTER	2,946	2,925	2,914	2,869
LEWIS RESEARCH CENTER	2,799	2,707	2,757	2,725
HEADQUARTERS	1.932	2.006	1,934	1,924
SUBTOTAL, FULL–TIME PERMAMENT WORKYEARS	24,060	23,935	23,757	23,383
OTHER THAN FULL–TIME PERMAMENT WORKYEARS	270	296	232	240
SUBTOTAL, CEILING CONTROLLED FTE	24,330	24,231	23,989	23,623
CORE		500	0	0
GRAND TOTAL, CEILING CONTROLLED FTE	24,330	24,731	23,989	23,623

SUMMARY OF BUDGET PLAN BY INSTALLATION
(THOUSANDS OF DOLLARS)

	1992 ACTUAL	1993 BUDGET ESTIMATE	1993 CURRENT ESTIMATE	1994 - BUDGET ESTIMATE
JOHNSON SPACE CENTER	245,944	255,441	252,475	261,086
KENNEDY SPACE CENTER	155,464	164,413	163,039	168,557
MARSHALL SPACE FLIGHT CENTER	231,657	237,137	234,730	242,847
STENNIS SPACE CENTER	14,264	16,322	14,643	15,279
GODDARD SPACE FLIGHT CENTER	249,989	264,580	257,846	266,311
AMES RESEARCH CENTER	158,860	172,228	162,876	169,529
LANGLEY RESEARCH CENTER	172,851	179,665	179,601	186,617
LEWIS RESEARCH CENTER	172,326	183,138	178,334	185,769
HEADQUARTERS	174,501	187,103	171,470	179,005
TOTAL, RESEARCH AND PROGRAM MANAGEMENT	1,575,856	1,660,027	1.615.014	1,675,000

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

NASA TOTAL

	FY 1992 ACTUAL	FY 1993 BUDGET ESTIMATE	FY 1993 CURRENT ESTIMATE	FY 1994 BUDGET ESTIMATE
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS	2,261	2,370	2,640	2,640 *
SPACE FLIGHT PROGRAMS	5,764	5,679	5,258	5,036
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	1,733	1,600	1,548	1,443
SPACE SHUTTLE PRODUCTION AND OPERATIONS	4,031	4,079	3,710	3,593
LAUNCH SERVICES	249	0	237	181
SPACE SCIENCE	2,370	2,404	2,466	2,196
PHYSICS AND ASTRONOMY	2,157	2,175	2,258	1,968
PLANETARY EXPLORATION	213	229	208	228
LIFE SCIENCES/	326	324	315	0
UFE AND MICROGRAVITY SCIENCES	0	0	0	1,055
SPACE APPLICATIONS/	1,822	1,952	1,940	0
MISSION TO PLANET EARTH	0	0	0	1,549
ADVANCED CONCEPTS AND TECHNOLOGY	1,766	1,885	1,605	1,568
SPACE RESEARCH AND TECHNOLOGY	1,603	1,724	1,446	1,404
COMMERCIAL PROGRAMS	163	161	159	164
AERONAUTICAL RESEARCH AND TECHNOLOGY	3,289	3,271	3,366	3,428
TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY	135	108	100	68
SPACE EXPLORATION	179	105	74	0
SAFETY RELIABILITY AND QUALITY ASSURANCE	125	141	129	132
ACADEMIC PROGRAMS	27	26	35	35
TRACKING AND DATA PROGRAMS	709	713	695	675
SUBTOTAL DIRECT	19,022	18,978	18,860	18,563
CENTER MANAGEMENT AND OPERATIONS	5,038	4,957	4,897	4,820
SUBTOTAL (FULL-TIME PERMANENT)	24,060	23,935	23,757	23,383
OTHER CONTROLLED FTES	270	296	232	240
TOTAL, FULL-TIME EQUIVALENTS	24,330	24,231	23,989	23,623
CORE	0	500		0
TOTAL, PROGRAM PLAN	24,330	24,731	23,909	23,623

*UNDER REVIEW

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
RESEARCH AND PROGRAM MANAGEMENT - FY 1994 ESTIMATES
DISTRIBUTION OF BUDGET PLAN BY FUNCTION BY INSTALLATION

FUNCTION	TOTAL NASA	JOHNSON SPACE CENTER	KENNEDY SPACE CENTER	MARSHALL SPACE FLIGHT CENTER	STENNIS SPACE CENTER	GODDARD SPACE FLIGHT CENTER	RESEARCH	RESEARCH	RESEARCH	
PERSONNEL AND RELATED COSTS										
1992 ACTUAL	1,526,715	239,253	151,872	225,463	13,688	242,933	154,023	168,170	167,945	163,368
1993 BUDGET	1,604,535	248,105	159,687	230,002	15,641	256,800	166,900	174,500	178,400	174,500
1993 CURRENT	1,568,375	246,236	158,915	228,622	14,096	250,746	158,935	175,709	174,332	160,784
1994 BUDGET	1,623,536	254,597	164,130	236,496	14,710	259,247	164,332	181,617	181,088	167,319
TRAVEL										
1992 ACTUAL	49,141	6,691	3,592	6,194	576	7,056	4,837	4,681	4,381	11,133
1993 BUDGET	55,492	7,336	4,726	7,135	681	7,780	5,328	5,165	4,738	12,603
1993 CURRENT	46,639	6,239	4,124	6,108	547	7.100	3,941	3,892	4,002	10,686
1994 BUDGET	51,464	6,489	4,427	6.351	569	7,064	5,197	5,000	4,681	11,686
TOTAL										
1992 ACTUAL	1,575,856	245,944	155,464	231,657	14,264	249,989	158,860	172,851	172,326	174,501
1993 BUDGET	1,660,027	255,441	164,413	237,137	16,322	264,580	172,228	179,665	183,138	187.103
1993 CURRENT	1.615,014	252,475	163,039	234,730	14,643	257,846	162,876	179,601	178,334	171,470
1994 BUDGET	1,675,000	261,086	168,557	242,847	15,279	266,311	169,529	186,617	185,769	179,005

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

PROPOSED APPROPRIATION LANGUAGE

RESEARCH AND PROGRAM MANAGEMENT

For necessnry expenses for personnel and related costs. including uniforms or allowunces therefor, as authorized by law (5 U.S.C. 5901-5902) and travel expenses, [$1,615,014,000] *$1.675.000.000: Provided,* That contracts may be entered into under this opproprintion for training. investigations. costs associated with personnel relocation, ond for other services, to be provided during the next fiscal yenr. *(Departments of Veterans Affairs and Housing and Urban Development. and Independent Agencies Appropriations* Act. *1993.)*

Installation
Justification

RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1994 ESTIMATES

LYNDON B. JOHNSON SPACE CENTER

CENTER ROLES AND MISSIONS

PRINCIPAL ROLES:

Space Station - Currently under review.

Space Shuttle Production and herations Capability - Modification of the orbiters; equipment upgrades to facilities; configuration management; system engineering and integration; and development, scheduling, and acquisition and/or modifications of support aircraft for astronaut training and flight operations.

Space Shuttle Operations - Operations planning, crew selection and training, medical operations, orbiter and payload flight control, utilization planning, and payload accommodation studies.

Environmental Effects and Crew Support Systems - Management, development, and analysis of the data base to ascertain any environmental impact of Space Transportation System (STS) operations. Development and demonstration of Environmental Control and Life Support Systems (ECLSS) and Extravehicular Activity (EVA) systems suitable for STS and advanced needs.

Advanced Missions and Technology - Management of studies to define advanced transportation and orbital systems. Development of prototypes, new systems and software for advanced systems.

Spacelab Development - Crew training in conjunction with flight hardware, and development and operation of simulators.

Payload Integration and Operations - Provides optional services for **NASA** payloads other than standard Shuttle services including development and delivery of payload accommodation equipment for capabilities common to multiple **NASA** missions.

Manned Vehicles - Development of manned space vehicles and associated supporting technology.

Life Science - Performance of medical research, investigation and development of solutions to space medicine problems, and development of information systems and equipment in support of medical operations and experiments; development of nutritional requirements and food preparation and packaging systems; development of Spacelab life sciences research capability; and definition and development of in-flight biomedical experiments.

SUPPORTING ROLES:

Lunar and Planetary Geosciences - Development and maintenance of technical discipline base for lunar and planetary geosciences and planetary material handling techniques.

Technology Experiments in Space - Management of the Orbiter experiments.

DISTRIBUTION OF FUL – TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

JOHNSON	FY 1992 ACTUAL	FY 1993 BUDGET ESTIMATE	FY 1993 CURRENT ESTIMATE	FY 1994 BUDGET ESTIMATE
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS	793	826	929	929 *
SPACE FLIGHT PROGRAMS	1,914	1,905	1,906	1,880
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	507	511	579	S/1
SPACE SHUTTLE PRODUCTION AND OPERATIONS	1,407	1,394	1,327	1,309
LAUNCH SERVICES	0	0	0	0
SPACE SCIENCE	45	46	49	24
PHYSICS AND ASTRONOMY	18	13	25	0
PLANETARY EXPLORATION	27	33	24	24
LIFE SCIENCES/	92	91	93	0
LIFE AND MICROGRAVITY SCIENCES	0	0	0	125
SPACE APPLICATIONS/	2	4	3	0
MISSION TO PLANET EARTH	0	0	0	0
ADVANCED CONCEPTS AND TECHNOLOGY	61	91	51	50
SPACE RESEARCH AND TECHNOLOGY	49	75	33	30
COMMERCIAL PROGRAMS	12	16	18	20
AERONAUTICAL RESEARCH AND TECHNOLOGY	0	0	0	0
TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY	0	0	0	0
SPACE EXPLORATION	117	83	28	0
SAFETY RELIABILITY AND QUALITY ASSURANCE	0	0	0	0
ACADEMIC PROGRAMS	0	0	0	0
TRACKING AND DATA PROGRAMS	0	0	0	0
SUBTOTAL DIRECT	3,024	3,046	3,059	3,008
CENTER MANAGEMENT AND OPERATIONS	616	585	547	540
SUBTOTAL (FULL–TIME PERMANENT)	3,640	3,631	3,606	3,548
OTHER CONTROLLED FTE'S	32	34	22	25
TOTAL, FULL–TIME EQUIVALENTS	3,672	3,665	3,620	3,573
CORE	0	20	0	0
TOTAL, PROGRAM PLAN	3,672	3,685	3.628	3.573

*UNDER REVIEW

PROGRAM DESCRIPTION

	Permanent Civil Service Workyears
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS	**929**

Currently under review.

SPACE FLIGHT PROGRAMS	**1,880**
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	571

This activity includes Center support to Spacelab, the engineering technical base, payload operations and support equipment, and advanced programs. Payload operations activities provide optional services for NASA payloads. The Engineering and Technical Base (ETB) provides the base research and engineering capability necessary to support ongoing and future efforts. Advanced programs conducts concept studies and development on flight systems and options for human transportation.

SPACE SHUTTLE PRODUCTION AND OPERATIONS	1,309

The staffing provides for Shuttle activities to support a schedule consistent with the major program milestones. It also provides development, integration, and operations support for the Mission Control Center (MCC), the Shuttle Mission Simulator (SMS), and other ground facilities needed for Space Shuttle operations. The staffing provides for Shuttle operational flight program management including system integration crew, equipment modification and processing, crew training, flight mission planning and operations, and procurement of Orbiter hardware.

	Permanent Civil Service Workyears
SPACE SCIENCE	**24**
PLANETARY EXPLORATION	24

The Center supports the Agency's planetary science program in the area of geosciences required to support potential future programs, provide curatorial support for lunar materials, assist in information dissemination, and interact with outside scientists. The research focuses on the composition, structures, and evolutionary histories of the solid bodies of the universe.

LIFE AND MICROGRAVITY SCIENCES	**125**

The Center has the lead role in evaluating human physiological changes associated with the space flight environment and developing effective countermeasures to assure crew health and optimal performance during all phases of flight. Other operationally oriented medical activities include defining and developing on-board health care systems and environmental monitoring systems; crew medical training; ground-based medical support of missions; developing a longitudinal crew health data base; and developing medical and psychological crew selection criteria. JSC has established a center for the support of biotechnology applications in microgravity in order to study growth factors, medical chemo/immunotherapeutics, and human tissue transplantation.

ADVANCED CONCEPTS AND TECHNOLOGY	**50**
SPACE RESEARCH AND TECHNOLOGY	30

JSC provides technology to support the evolution of the Space Shuttle, and the development of transportation systems for planetary exploration.

	Permanent Civil Service Workvears
COMMERCIAL PROGRAM.....	20

This program's two primary goals are to promote and develop private sector investment in space-base technologies and to promote industrial productivity through the transfer to the nation's commercial sector of technologies that derive from NASA's Research and Development (R&D) programs and activities. To achieve its goals, Commercial Programs works to establish innovative partnerships and innovative approaches leading to new commercial enterprises, products, and services.

CENTER MANAGEMENT AND OPERATIONS SUPPORT .	540

Center Management and Operations Support provides services to all JSC organizations. The civil service personnel include:

Director and Staff - The Center Director, Deputy Director, and immediate staff, e.g, Legal, Personnel, Equal Opportunity, Technical Planning, and Public Affairs.

Management Support - Personnel providing information and control service supporting all levels of Center management, both program and functional.

Operations Support - Personnel managing and providing for the operation and maintenance of institutional facilities, buildings, systems, and equipment.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
I.	PERSONNEL AND RELATED COSTS	239.253	248.105	246.236	254.597
	A. COMPENSATION AND BENEFITS	234,475	242,213	243.256	251.213
	1. COMPENSATION	197,664	203,807	203,547	208,638
	2. BENEFITS	36,811	38,406	39,709	42,575
	B. SUPPORTING COSTS	4.778	5.892	2.980	3.384
	1. TRANSFER OF PERSONNEL	534	590	725	385
	2. INVESTIGATIVE SERVICES	0	1,900	200	182
	3. PERSONNEL TRAINING	4,244	3,402	2,055	2,817
II.	TRAVEL	6,691	7,336	6,239	6.489
	A. PROGRAM TRAVEL	5,078	5,883	4,911	5,108
	B. SCIENTIFIC AND TECHNICAL DEVELOPMENT TRAVEL	484	378	430	447
	C. MANAGEMENT AND OPERATIONS TRAVEL	1,129	1,075	898	934
	TOTAL, FUND REQUIREMENTS	245,944	255,441	252,475	261,086

		1992 Actual	1993 Budget Bstimate	1993 Current Estirnate	1994 Budget Estimate
			(Thousands of Dollars)		
	Explanation of Fund Requirements				
I.	**PERSONNEL AND RELATED COSTS**	239,253	248,105	246,236	254,597
	A. Compensation and Benefits	234,475	242,213	243,256	251,213
	1. Compensation	197,664	203,807	203,547	208,638

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate reflects Congressional reductions. The increase from the 1993 Current Estimate to the 1994 Estimate reflects full year funding for the 1993 pay raise, normal salary growth for promotions, within grades and merit pay, offset by the "Executive Order 12839" FTE reduction.

	2. Benefits	36,811	38,406	39,709	42,575

The increase from the 1993 Budget Estimate to the 1993 Current Estimate is due to a reassessment of benefit components. Increases in FICA, retirement and TSP are partially offset by repricing the health insurance estimate. The 1994 Budget Estimate increase includes the anticipated normal growth in health benefits, the full year cost of the 1993 pay raise and increases in FERS, FICA and thrift offset by Executive Order FTE reductions.

	B. Supporting Costs	4.778	5.892	2.980	3.384
	1. Transfer of Personnel	534	590	725	385

The increase from the 1993 Budget Estimate to the 1993 Current Estimate reflects an increase in the number of employees who are eligible for these benefits. The decrease in the 1994 Budget Estimate is the result of

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)		

fewer hires due to Executive Order FTE reductions and less use of relocation services.

2.	Investigative Services	0	1,900	200	182

The 1993 Current Estimate reflects elimination of the Core conversions. The remaining dollars fund investigative services which were previously budgeted at Headquarters. The 1994 Budget Estimate reflects a decrease due to fewer new hires requiring security investigations.

3.	Personnel Training	4,244	3,402	2,055	2,817

The purpose of the JSC training program is to continue to develop the skills and knowledge of civil service employees in order to more efficiently support center roles and missions. The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is the result of budget constraints. The 1994 Budget Estimate increase reflects efforts to restore training deferred from 1993.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
	Explanation of Fund Requirements				
II.	TRAVEL	6.691	7.336	6.239	6.489
	A. Program Travel	5,078	5,883	4,911	5,108

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is a result of the re-evaluation and reallocation of available funds to meet center FTE priorities. The increase from the 1993 Current Estimate to the 1994 Budget Estimate is due to increased cooperative ventures with foreign countries and increased mission support.

	B. Scientific and Technical Development Travel	484	378	430	447

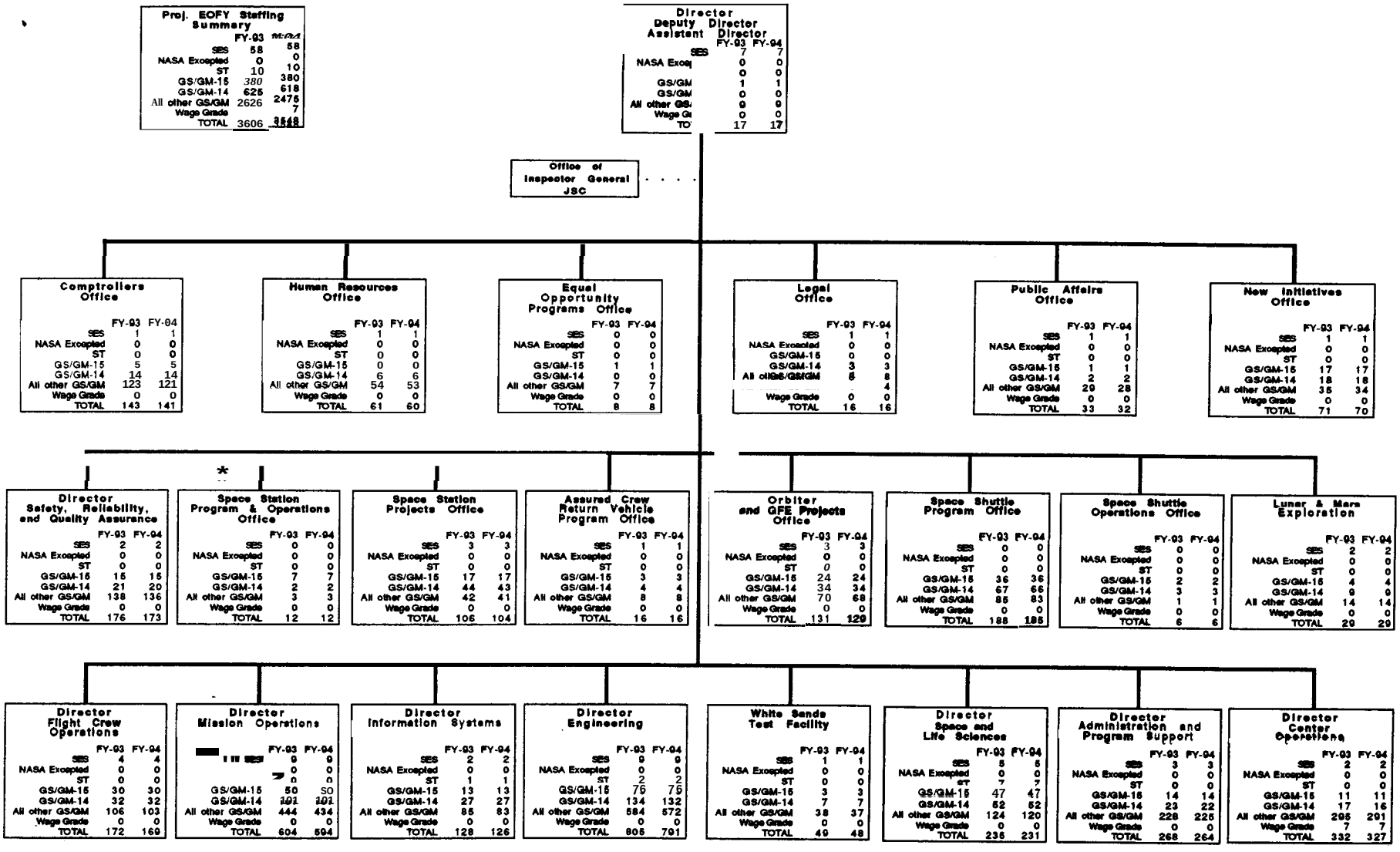
The increase from 1993 Budget Estimate to the 1993 Current Estimate and the 1994 Budget Estimate is due to increased participation in research symposia; and provides opportunities to keep the highly technical workforce abreast of "state-of-the-art" technical issues and advancements in the aerospace; scientific; and research and development communities.

	C. Management and Operations Travel	1,129	1,075	898	934

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is a result of the re-evaluation and reallocation of available funds to the Scientific and Technical Development travel function and to cover FTE requirements. The increase from the 1993 Current Estimate to the 1994 Budget Estimate maintains operations in 1994 at the 1993 level.

National Aeronautics & Space Administration

Johnson Space Center



* Currently under review.

Kennedy
Space Center

RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1994 ESTIMATES

JOHN F. KENNEDY SPACE CENTER

CENTER ROLES AND MISSIONS

PRINCIPAL ROLES:

Space Shuttle Ground ODerations - This includes Space Shuttle launch preparation, including Spacelab assembly and checkout and payload experiment integration; upper stages processing; orbiter, Spacelab, and Ground Support Equipment (GSE) logistics; and operation and maintenance of GSE.

Space Station - Currently under review.

Launch Vehicle Operations - This includes government oversight of all launch vehicle and payload processing and checkout activities for all NASA contracted expendable launch vehicle and upper stage launch services both at the Kennedy Space Center (KSC) and the Vandenberg Air Force Base, and for NASA launch management responsibility.

DISTRIBUTION OF FU – TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

KENNEDY	FY 1992 ACTUAL	PI1993 BUDGET ESTIMATE	PI1993 CURRENT ESTIMATE	FY 1994 BUDGET ESTIMATE
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS	224	233	302	302 *
SPACE FLIGHT PROGRAMS	1,772	1,766	1,651	1,625
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	332	336	344	337
SPACE SHUTTLE PRODUCTION AND OPERATIONS	1,440	1,430	1,307	1,288
LAUNCH SERVICES	40	0	49	47
SPACE SCIENCE	97	90	94	0
PHYSICS AND ASTRONOMY	97	90	94	0
PLANETARY EXPLORATION	0	0	0	0
LIFE SCIENCES/	18	20	14	0
LIFE AND MICROGRAVITY SCIENCES	0	0	0	98
SPACE APPLICATIONS/	0	0	0	0
MISSION TO PLANET EARTH	0	0	0	0
ADVANCED CONCEPTS AND TECHNOLOGY	10	9	8	8
SPACE RESEARCH AND TECHNOLOGY	5	3	4	4
COMMERCIAL PROGRAMS	5	6	4	4
AERONAUTICAL RESEARCH AND TECHNOLOGY	0	0	0	0
TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY	0	0	0	0
SPACE EXPLORATION	0	2	0	0
SAFETY RELIABILITY AND QUALITY ASSURANCE	0	0	0	0
ACADEMIC PROGRAMS	0	0	0	0
TRACKING AND DATA PROGRAMS	0	0	0	0
SUBTOTAL DIRECT	2,161	2,120	2,118	2,080
CENTER MANAGEMENT AND OPERATIONS	382	390	390	387
SUBTOTAL (FULL–TIME PERMANENT)	2,543	2,510	2,508	2,467
OTHER CONTROLLED FTE'S	13	25	13	13
TOTAL, FULL–TIME EQUIVALENTS	2,556	2,535	2,521	2,480
CORE	0	0	0	0
TOTAL, PROGRAM PLAN	2,556	2,535	2,521	2,480

*UNDER REVIEW

PROGRAM DESCRIPTION

	Permanent Civil Service Workyears
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS.....	302

Currently under review.

SPACE FLIGHT PROGRAMS.....	1,625
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT...	337

KSC's role in payload operations and support is to provide facilities and support to the various customers during processing of their payloads and to coordinate with other NASA organizations in analyzing potential payload users' launch site support requirements. The Center also has responsibility for the launch site development and ground operations for the Spacelab Program. The Center advanced program planning and technology development activities include the preparation of conceptual plans for the extension or enhancement of on-going programs/projects and for new and innovative future space programs.

SPACE SHUTTLE PRODUCTION AND OPERATIONS.....	1,288

KSC is responsible for the design, modification and/or acquisition, installation, and checkout of equipment and facilities to be used in support of Space Shuttle launch requirements as well as modifications to and maintenance of existing GSE systems. KSC also provides launch construction support for Launch Complex 39 and other facilities or equipment. The operations role includes the test and checkout of each flight element as it arrives for launch; the integration of elements (orbiter, external tank, solid rocket boosters and their subsystems) into the Space Shuttle vehicle, and the integrated testing of the stacked configuration, propellant loading, and launch. KSC is also responsible for ferrying the orbiter from the landing site back to the center; orbiter refurbishment; retrieval and disassembly of the solid rocket boosters; and operation and maintenance of worldwide contingency and secondary landing sites.

	Permanent Civil Service Workyears
LAUNCH SERVICES	47

KSC is responsible for overall launch management of all NASA contracted ELV launch services at both the Eastern and Western Ranges.

LIFE SCIENCES	98

KSC will continue its support role in the integration of biomedical experiments for life sciences research on the Space Shuttle. Included is the responsibility for providing and managing a Life Sciences Principal Investigator Support Facility.

ADVANCED CONCEPTS AND TECHNOLOGY	8
SPACE RESEARCH AND TECHNOLOGY	4

Technology applications and demonstrations will continue in the areas of telerobotics, artificial intelligence, and regenerative life support.

COMMERCIAL PROGRAMS	4

This program's two primary goals are to promote and develop private sector investment in space-based technologies and to promote industrial productivity through the transfer to the nation's commercial sector of technologies that derive from NASA's Research and Development (R&D) programs and activities. To achieve its goals, Commercial Programs works to establish innovative partnerships and innovative approaches leading to new commercial enterprises, products, and services.

	Permanent Civil Service Workvears
CENTER MANAGEMENT AND OPERATIONS SUPPORT.....	387

Center Management and Operations Support provides support to all KSC organizations. The civil service personnel involved are:

Director and Staff - The Center Director, Deputy Director, and the immediate staff, e.g., Legal, Patent Counsel, Equal Opportunity, and Public Affairs.

Management Support - Personnel providing administrative and management services including resources and financial management, program control, contracting and procurement, property management, personnel management, and management systems and analysis.

herations Support - Personnel providing for the operations and maintenance of institutional facilities, buildings, systems and equipment.

I.	PERSONNEL AND RELATED COSTS	151.872	159.687	158.915	164.130
	A. COMPENSATION AND BENEFITS	148,875	156,529	156,212	160,885
	1. COMPENSATION	124,836	131,232	130,484	133,986
	2. BENEFITS	24,039	25,297	25,728	26,899
	B. SUPPORTING COSTS	2.997	3.158	2.703	3.245
	1. TRANSFER OF PERSONNEL	647	547	524	360
	2. INVESTIGATIVE SERVICES	0	538	298	352
	3. PERSONNEL TRAINING	2,350	2,073	1,881	2,533
II.	TRAVEL	3,592	4,726	4,124	4,427
	A. PROGRAM TRAVEL	2,239	3,501	2,588	2,981
	B. SCIENTIFIC AND TECHNICAL DEVELOPMENT TRAVEL	99	114	104	106
	C. MANAGEMENT AND OPERATIONS TRAVEL	1,254	1,111	1,432	1,340
	TOTAL, FUND REQUIREMENTS	155.464	164.413	163.039	168.557

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
	(Thousands of Dollars)			
Explanation of Fund Requirements				
I. PERSONNEL AND RELATED COSTS	**151,872**	**159,687**	**158,915**	**164,130**
A. Compensation and Benefits	**148,875**	**156,529**	**156,212**	**160,885**
1. Compensation	**124,836**	**131,232**	**130,484**	**133,986**

The decrease in the **1993** Current Estimate from the **1993** Budget Estimate reflects a reduction of overtime and lump sum payments associated with a lower than planned attrition rate and a reduction in FTE usage. The increase from the **1993** Current Estimate to the **1994** Budget Estimate reflects full year funding of the **1993** pay raise, normal salary growth for promotions, within grades, and merit pay, offset by the "Executive Order **12839"** FTE reduction.

2. Benefits	**24,039**	**25,297**	**25,728**	**26,899**

The increase from the **1993** Budget Estimate to the **1993** Current Estimate is due to a reassessment of benefit components. Increases in FICA, medicare, retirement and TSP are partially offset by reductions in health insurance estimates. The **1994** Budget Estimate increase includes full year funding of the **1993** pay raise, health benefits increases, increases in FERS, FICA, and Thrift, offset by Executive Order reductions in FTE.

B. Supporting Costs	**2,997**	**3,158**	2,703	**3,245**
1. Transfer of Personnel	**647**	**547**	**524**	**360**

The decrease in the **1993** Budget Estimate to the **1993** Current Estimate and the **1994** Budget Estimate reflects a

	1992 Actual	1993 Budget Bstimate	1993 Current Estimate	1994 Budget Bstimate
		(Thousands of Dollars)		

reduction in the number and mix of planned new hires.

2.	Investigative Services	0	538	298	352

The estimate for Investigative Services in the 1993 Budget reflects the transfer of budget responsibility for employee security investigations from Headquarters to the Center. The decrease in the 1993 Current Estimate from the 1993 Budget Estimate reflects a change in the definition of the ADP personnel security program and budget constraints. The 1994 increase reflects delayed renewal investigations and 1994 new hire investigations.

3.	Personnel Training	2,350	2,073	1,881	2,533

The purpose of the KSC training program is to continue to develop the skills and knowledge of civil service employees in order to more efficiently support center roles and missions. The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is the result of budget constraints. The 1994 Budget Estimate increase reflects the restoration of training deferred from 1993.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Bstimate
		(Thousands of Dollars)			
	Explanation of Fund Requirements				
II.	**TRAVEL**	3,592	4.726	4,124	4.427
	A. Program Travel	2,239	3,501	2,588	2,981

The decrease in program travel from the 1993 Budget Estimate to the 1993 Current Estimate is due to budget constraints which resulted in a realignment of available funds to meet other center priorities. The increase from the 1993 Current Estimate to the 1994 Budget Estimate provides the necessary support for test, checkout and launch of space vehicles.

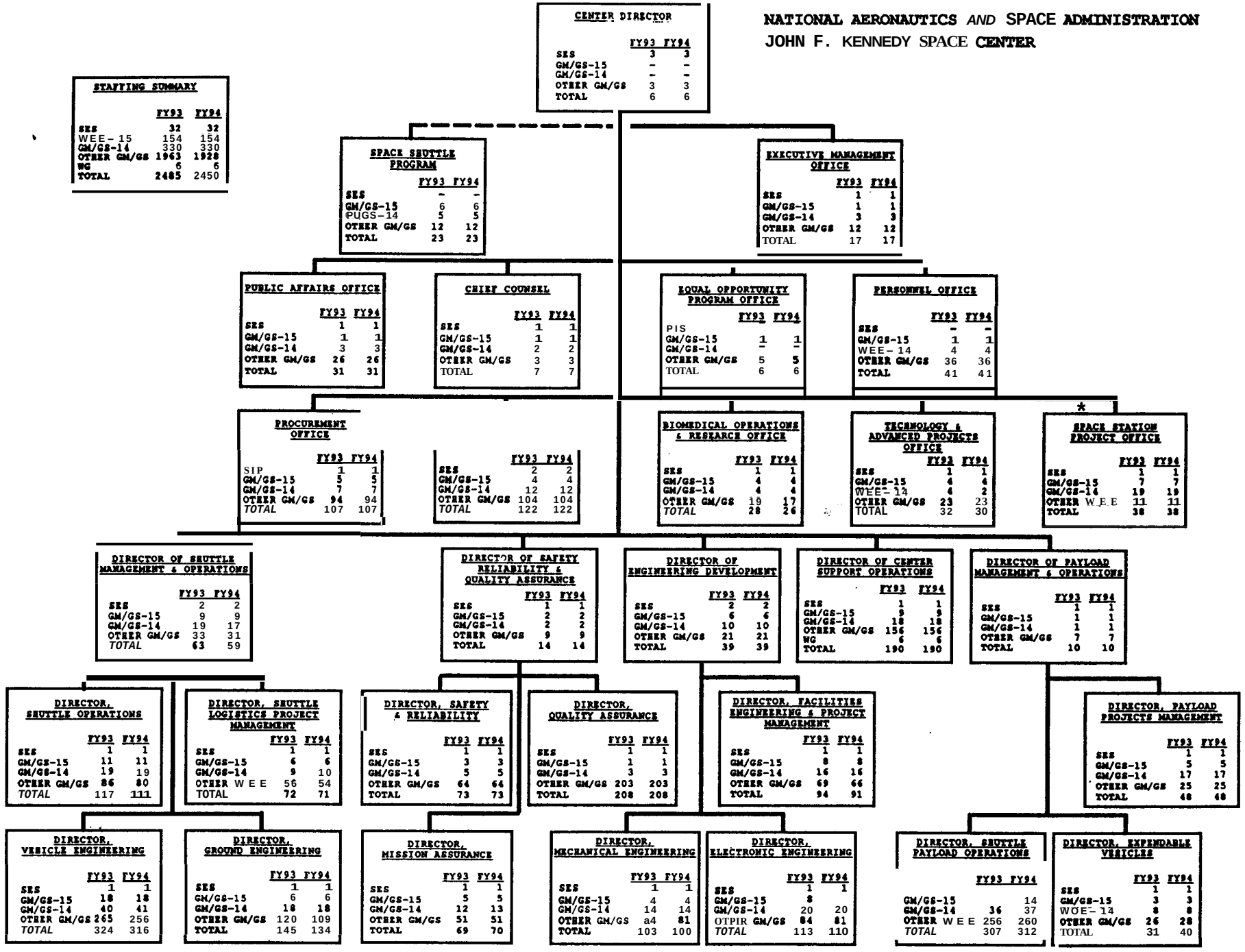
	B. Scientific and Technical Development Travel	99	114	104	106

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is a result of realignment of funds to the management and operations function. The increase from the 1993 Current Estimate to the 1994 Budget Estimate is due to increased participation in research symposia; and provides opportunities to keep the highly technical workforce abreast of "state-of-the-art" technical issues and advancements in the aerospace; scientific; and research and development communities.

	C. Management and Operations Travel	1,254	1,111	1,432	1,340

The increase from the 1993 Budget Estimate to the 1993 Current Estimate reflects realignment of funds from the scientific and technical development function to continue essential functional management reviews. The decrease from the 1993 Current Estimate to the 1994 Budget Estimate reflects a shifting of funds to program travel to meet program requirements.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER



* Currently under review.

Marshall
Space Flight
Center

RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1994 ESTIMATES

GEORGE C. MARSHALL SPACE FLIGHT CENTER

CENTER ROLES AND MISSIONS

PRINCIPAL ROLES:

Propulsion Systems - Design, development, and procurement of propulsion elements of *the* Space Transportation System including the Advanced Solid Rocket Motor (ASRM). Advanced program and new technology development efforts are focused on analysis and definition of propulsion/transportation systems to meet national needs for the next 30 to 40 years.

Launch Vehicles - Design, development, integration, and testing of launch vehicles and space transportation systems and system definition for future manned and unmanned launch systems.

Upper Stages - Design, development, procurement, and integration of upper stages such as the Inertial Upper Stage.

Spacelab Payload Mission Management - Program management, systems engineering, development of payload carriers, procurement, flight and ground operations support engineering for the program; integration of microgravity flight experiments and science and applications flight experiments for Spacelab; operation of the integrated payload carrier systems, and mission science operation training of mission and payload specialists.

Space Station Freedom - Currently under review.

Advanced X-Rav Astrophysics Facility - Design, development, testing and manufacture of two observatories that will provide detailed, long-term study of x-ray emissions from the universe and the phenomena that produce them.

SUPPORTING ROLES:

Research and Technology - Conduct of research and technology in the propulsion and power systems, structural systems, materials and manufacturing processes, microgravity science systems, software engineering, environmental control/life support systems, earth and astronomical science systems, and guidance and control systems.

Advanced Development and Studies - Development of selected technologies into specific flight subsystems or systems application, and definition of space systems to meet future Planetary Exploration needs.

Science - Conduct ground-based research and flight experiments in selected science areas with major emphasis in solar physics, astrophysics, and atmospheric, Earth, and microgravity science.

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

MARSHALL	FY 1992 ACTUAL	FY 1993 BUDGET ESTIMATE	FY 1993 CURRENT ESTIMATE	FY 1994 BUDGET ESTIMATE
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS	557	579	706	706 *
SPACE FLIGHT PROGRAMS	1,613	1,447	1,275	1,132
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	705	570	443	370
SPACE SHUTTLE PRODUCTION AND OPERATIONS	908	877	832	762
LAUNCH SERVICES	77	0	57	10
SPACE SCIENCE	561	629	671	
PHYSICS AND ASTRONOMY	559	623	671	
PLANETARY EXPLORATION	2	6	0	0
LIFE SCIENCES/	0	0	0	0
LIFE AND MICROGRAVITY SCIENCES	0	0	0	405
SPACE APPLICATIONS/	228	241	272	0
MISSION TO PLANET EARTH	0	0	0	117
ADVANCED CONCEPTS AND TECHNOLOGY	169	256	149	159
SPACE RESEARCH AND TECHNOLOGY	149	234	130	138
COMMERCIAL PROGRAMS	20	22	19	21
AERONAUTICAL RESEARCH AND TECHNOLOGY	0	0	0	0
TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY	2	0	0	0
SPACE EXPLORATION	10	0	28	0
SAFETY RELIABILITY AND QUALITY ASSURANCE	0	0	0	0
ACADEMIC PROGRAMS	0	0	0	0
TRACKING AND DATA PROGRAMS	16	17	17	17
SUBTOTAL DIRECT	3,233	3,169	3,175	3,075
CENTER MANAGEMENT AND OPERATIONS	502	481	485	485
SUBTOTAL (FULL-TIME PERMANENT)	3,735	3,650	3,660	3,560
OTHER CONTROLLED FTE'S	11	11	11	11
TOTAL, FULL-TIME EQUIVALENTS	3,746	3,661	3,671	3,571
CORE	0	0	0	0
TOTAL, PROGRAM PLAN	3,746	3,661	3,671	3,571

*UNDER REVIEW

PROGRAM DESCRIPTION

	Permanent Civil Service Workyears
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS.....	706

Currently under review.

SPACE FLIGHT PROGRAMS.....	1,132
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT.....	370

Spacelab program management and system engineering; integration of European Space Agency (ESA) and NASA-provided hardware and software; mission integration and preparation for Spacelab and other missions involving Spacelab hardware. Management of the Solid Propulsion Integrity Program (SPIP) to improve the engineering technology base for Solid Rocket Motor (SRM). Definition and implementation of in-house and contracted advanced system studies, advanced development tasks, and flight demonstrations to establish fundamental planning and decision making data. Definition of launch vehicles and engine requirements to support current and future national needs.

	Permanent Civil Service Workyears
SPACE SHUTTLE PRODUCTION AND OPERATIONS.....	762

Analysis of the flight hardware including the Solid R cket Booster (SRB), Solid Rocket Motor (SRM), Space Shuttle Main Engine (SSME), and External-Tank (ET). This effort also provides main engines for the Space Shuttle orbiter fleet and continues a logistics support, and standard operational services for the Space Shuttle. Other activities include the production, overhaul, and acquisition of hardware for Shuttle flights including the procurement of external tanks, solid rocket motors and propellants, and booster hardware.

LAUNCH SERVICES.....	**10**

Support of the Inertial Upper Stage (IUS) missions with readiness reviews, joint integrated flight simulations, launch and flight operations support, and post flight evaluation of the upper stage performance. Management of the development, production and launch support of the Small Expendable Deployer System (SEDS).

SPACE SCIENCE.....	**529**
PHYSICS AND ASTRONOMY.....	529

Marshall Space Flight Center (MSFC) continues as the lead Center for the development and operations for the AXAF mission. These missions use a shuttle launched observatory x-ray telescope for studies of the universe in the spectral region between that observed by the Hubble Space Telescope in the optical region and the Compton Observatory in the gamma ray region. MSFC will continue its responsibilities for managing and planning Shuttle/Spacelab activities of the Atmospheric Laboratory for Applications and Science (ATLAS), International Microgravity Laboratory (IML), United States Microgravity Laboratory (USML), and other dedicated payload missions.

	Permanent Civil Service Workvears
LIFE AND MICROGRAVITY SCIENCES.....	405

The Materials Processing program provides the fundamental science and technology for processing materials under conditions that allow detailed examination of the constraints imposed by gravitational forces. Research continues in the areas of crystal growth, fluid physics, biophysics, solidification mechanics, chemistry and polymetric materials.

MSFC will, also design, develop, and test payload carriers; develop payload definitions; integrate microgravity flight experiments and science and applications flight experiments for Spacelab; operate integrated payload systems; and train mission and payload specialists in the science aspects of their missions.

MISSION TO PLANET EARTH.....	117

Theoretical, field, and laboratory experimental research will be conducted in the global weather, severe storms, and local weather areas. Efforts will be concentrated on improving understanding of severe storms, local and global scale weather systems, and in establishing criteria for Shuttle missions to gather data required to understand and predict severe storms and atmospheric conditions.

ADVANCED CONCEPTS AND TECHNOLOGY.....	159
SPACE RESEARCH AND TECHNOLOGY..	138

The space research and technology activities are in earth-to-orbit propulsion, cryogenic engines, in-space technology experiments, automation and robotics, and science and data analysis for the Long Duration Exposure facility.

	Permanent Civil Service Workyears
COMMERCIAL PROGRAMS.....	21

This program's two primary goals are to promote and develop private sector investment in space-based technologies and to promote industrial productivity through the transfer to the nation's commercial sector of technologies that derive from NASA's Research and Development (R&D) programs and activities. To achieve its goals, Commercial Programs works to establish innovative partnerships and innovative approaches leading to new commercial enterprises, products, and services.

TRACKING AND DATA PROGRAMS.....	17

Management and maintenance of the Program Support Communications Network which provides communications hardware, software, and transmission medium that inter-connects NASA Headquarters, Field Installations, and major contractor locations for the transfer of data, voice, and video.

CENTER MANAGEMENT AND OPERATIONS SUPPORT.....	485

Center Management and Operations Support is provided to all MSFC organizations and includes the following:

Director and Staff - The Center Director, Deputy Director, and immediate staff, e.g., Comptroller, Human Resources and Administrative Support, Legal, Patent Counsel, Equal Opportunity, Public Affairs.

Management Support - Management and support services to all levels of Center management, both program and functional.

Operations Support - Operation and maintenance of institutional facilities, buildings, systems, and equipment.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
I.	PERSONNEL AND RELATED COSTS	225,463	230,002	228,622	236,496
A.	COMPENSATION AND BENEFITS	221,554	226,472	226,372	233,196
1.	COMPENSATION	185,295	187,434	188,747	193,686
2.	BENEFITS	36,259	39,038	37,625	39,510
B.	SUPPORTING COSTS	3,909	3,530	2.250	3,300
1.	TRANSFER OF PERSONNEL	652	738	650	800
2.	INVESTIGATIVE SERVICES	0	400	200	200
3.	PERSONNEL TRAINING	3,257	2,392	1,400	2,300
II.	TRAVEL	6,194	7,135	6,108	6,351
A.	PROGRAM TRAVEL	4,959	6,195	5,165	5,296
B.	SCIENTIFIC AND TECHNICAL DEVELOPMENT TRAVEL	219	200	200	275
C.	MANAGEMENT AND OPERATIONS TRAVEL	1,016	740	743	780
	TOTAL, FUND REQUIREMENTS	231,657	237,137	234,730	242,847

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
	(Thousands of Dollars)			

Explanation of Fund Requirements

I.	PERSONNEL AND RELATED COSTS	225,463	230,002	228,622	236,496
A.	Compensation and Benefits	221,554	226,472	226,372	233,196
1.	Compensation	185,295	187,434	188,747	193,686

The increase in the 1993 Current Estimate from the 1993 Budget Estimate reflects a re-estimate of costs due to lower attrition in 1992 and higher salaried new hires than previously planned. This contributes to a higher base salary at the beginning of 1993. The increase in the 1994 Budget Estimate reflects full year funding of the 1993 pay raise, normal salary growth due to promotions, within grades, and merit pay, offset by the "Executive Order 12839" FTE reduction.

2.	Benefits	36,259	39,038	37,625	39,510

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is the result of repricing due to lower than anticipated benefits. The 1994 Budget Estimate increase results from full year funding of the 1993 pay raise, increases in retirement benefits, offset by Executive Order reductions in FTE.

B.	Supporting Costs	3,909	3,530	2,250	3,300
1.	Transfer of Personnel	652	738	650	800

The decrease in the 1993 Current Estimate from the 1993 Budget Estimate reflects a reduction in the number of planned new hires. The increase in the 1994 Budget Estimate allows for additional hires requiring the use of

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			

relocation benefits.

2.	Investigative Services	0	400	200	200

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate reflects the elimination of Support Service Contractor Investigations.

3.	Personnel Training	3,257	2,392	1,400	2,300

The purpose of the MSFC training program is to continue to develop the skills and knowledge of civil service employees in order to more efficiently support center roles and missions. The decrease from the 1993 Budget Estimate to the 1993 Current Estimate results from budget constraints. The increase from the 1993 Current Estimate to the 1994 Budget Estimate reflects the restoration of deferred 1993 training.

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
	(Thousands of Dollars)			

Explanation of Fund Requirements

II.	TRAVEL	6,194	7,135	6,108	6,351
	A. Program Travel	4,959	6,195	5,165	5,296

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to a constrained budget. The 1994 Budget Estimate reflects the continued level of effort as experienced in 1993.

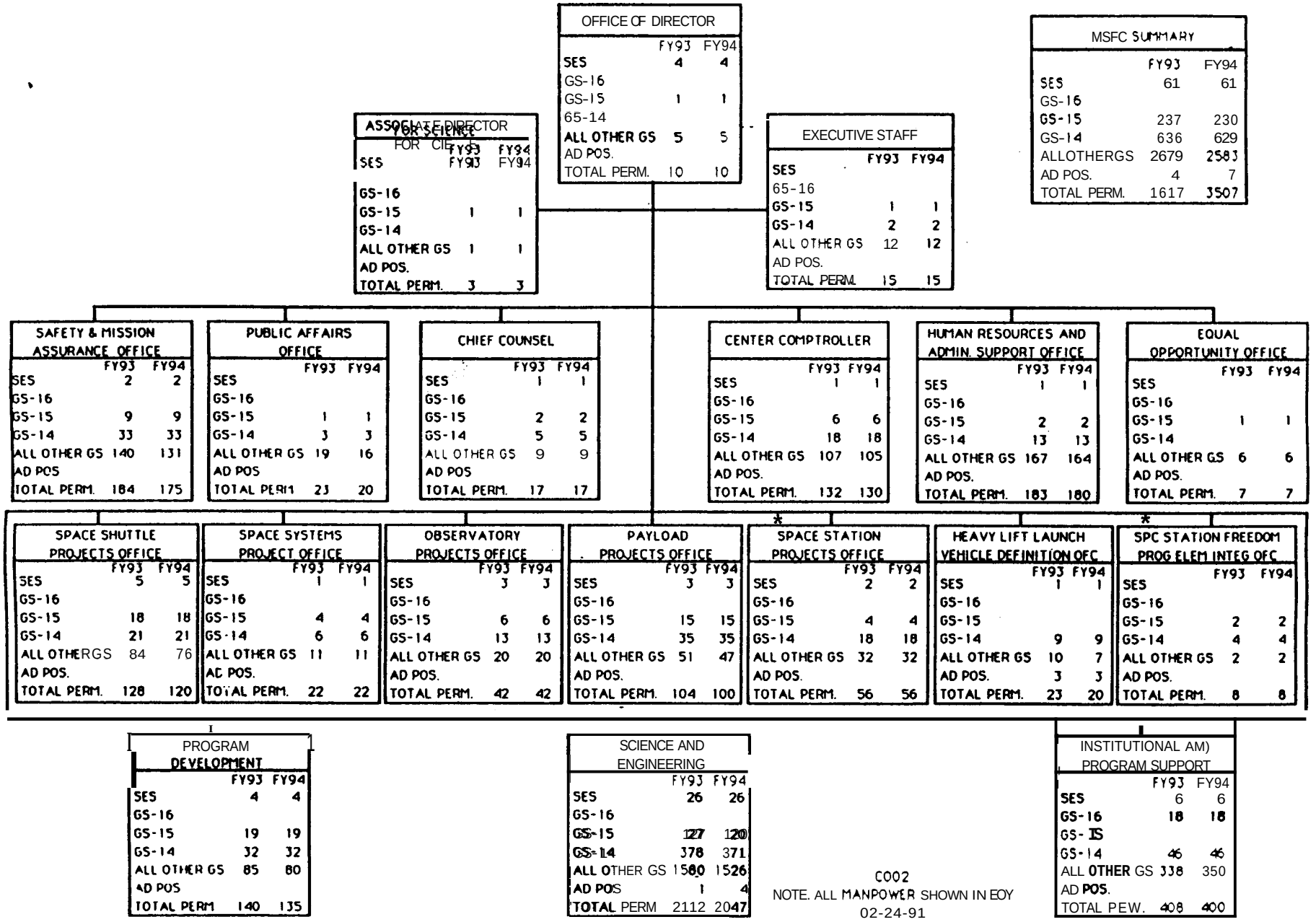
	B. Scientific and Technical Development Travel	219	200	200	275

The increase from the 1993 Budget Estimate to the 1994 Current Estimate is due to increased participation in research symposia; and provides opportunities to keep the highly technical workforce abreast of "state-of-the-art" technical issues and advancements in the aerospace; scientific; and research and development communities.

	C. Management and Operations Travel	1,016	740	743	780

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to a constrained budget. The increase in the 1994 Budget Estimate is due primarily to inflation and continuous efforts to provide functional management oversight and review.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GEORGE C. MARSHALL SPACE FLIGHT CENTER



* Currently under review.

Stennis
Space Center

RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1994 ESTIMATES

JOHN C. STENNIS SPACE CENTER

CENTER ROLES AND MISSIONS

PRINCIPAL ROLES:

Space Shuttle - Provides, maintains, and manages the facilities and the related capabilities required for the continued development and acceptance testing of the Space Shuttle Main Engines.

Advanced Solid Rocket Motor - Provides project management for all Advanced Solid Rocket Motor (ASRM) activities at Stennis Space Center (SSC) including contractor management, facility design and construction, and ASRM test support functions.

National Aerospace Plane - Provides management oversight of National Aerospace Plane (NASP) Propulsion Test Facility design modifications and construction. Design, construction, and activation of the High Heat Flux Facility (HHFF) for high temperature material testing is underway. This Center also has project responsibility for implementing the test activities of the NASP propulsion project requirements.

Global Change Research - Conducts fundamental and applied research, develops advanced airborne sensors and data/information systems, and conducts test and evaluation activities of remote sensing technology.

Support to Tenant Agencies - Provides technical and institutional support to resident agencies.

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

STENNIS	FY 1992 ACTUAL	FY 1993 BUDGET ESTIMATE	FY 1993 CURRENT ESTIMATE	FY 1994 BUDGET ESTIMATE
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS	0	0	0	0 *
SPACE FLIGHT PROGRAMS	117	116	96	94
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	59	60	46	44
SPACE SHUTTLE PRODUCTION AND OPERATIONS	58	56	50	50
LAUNCH SERVICES	0	0	0	0
SPACE SCIENCE	0	0	0	0
PHYSICS AND ASTRONOMY	0	0	0	0
PLANETARY EXPLORATION	0	0	0	0
LIFE SCIENCES/	0	1	0	0
LIFE AND MICROGRAVITY SCIENCES	0	0	0	0
SPACE APPLICATIONS/	9	9	5	0
MISSION TO PLANET EARTH	0	0	0	5
ADVANCED CONCEPTS AND TECHNOLOGY	13	15	16	16
SPACE RESEARCH AND TECHNOLOGY	2	0	4	4
COMMERCIAL PROGRAMS	11	15	12	12
AERONAUTICAL RESEARCH AND TECHNOLOGY	0	0	0	0
TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY	6	0	18	18
SPACE EXPLORATION	0	0	0	0
SAFETY RELIABILITY AND QUALITY ASSURANCE	2	0	1	1
ACADEMIC PROGRAMS	1	0	2	2
TRACKING AND DATA PROGRAMS	0	0	0	0
SUBTOTAL DIRECT	148	141	138	136
CENTER MANAGEMENT AND OPERATIONS	73	75	75	75
SUBTOTAL (FULL-TIME PERMANENT)	221	216	213	211
OTHER CONTROLLED FTE'S	5	6	5	5
TOTAL, FULL-TIME EQUIVALENTS	226	222	218	216
CORE	0	28	0	0
TOTAL, PROGRAM PLAN	226	250	218	216

*UNDER REVIEW

PROGRAM DESCRIPTION

	Permanent Civil Service Workvears
SPACE FLIGHT PROGRAMS	94
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	44

SSC provides maintenance and management of the facilities needed to test propulsion concepts and technologies.

SPACE SHUTTLE PRODUCTION AND OPERATIONS	50

Provides maintenance and management of the facilities and the related capabilities required for the development and acceptance testing of the Space Shuttle Main Engines.

MISSION TO PLANET EARTH	5

Science and technology laboratories conduct research investigations in the application of remotely-sensed data. This includes conducting applied research investigations for the application of new sensor data to prioritize information requirements of national concern in the areas of agricultural productivity, geological explorations, and land resources management. SSC also conducts research and development into applications for non-remote sensing, primarily in such areas as environmental system development and closed ecosystems development.

ADVANCED CONCEPTS AND TECHNOLOGY	16
SPACE RESEARCH AND TECHNOLOGY	4

Stennis Space Center conducts technology development projects, including, Robust Pump, Hydrogen Leak Detection and Plume Diagnostics. SSC also supports strategic planning and representation on discipline area and Space Systems working groups.

	Permanent Civil Service Workyears
CONMERCIAL PROGRAMS.....	12

This program's two primary goals are to promote and develop private sector investment in space-based technologies and to promote industrial productivity through the transfer to the nation's commercial sector of technologies that derive from NASA's Research and Development (R&D) programs and activities. To achieve its goals, Commercial Programs works to establish innovative partnerships and innovative approaches leading to new commercial enterprises, products, and services.

TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY.....	18

The SSC provides management oversight to the NASP Propulsion Test Facility design, construction, planning and eventual conduct of the NASP propulsion systems tests.

With the expected completion of the High Heat Flux Facility (HHFF), testing will begin on 20 X 20 NASP sample panels. The HHFF gas generator will test panels at temperatures between 4,000 and 6,000 degrees F. Data received will enable NASP engineers to determine the extent of damage to the materials as well as the distribution of heat throughout the panels.

SAFETY, RELIABILITY, & QUALITY ASSURANCE.....	1

SSC provides technical support in monitoring various SR&QA tasks.

ACADEMIC PROGRAMS.....	2

SSC provides support to the Tri-State Education Initiative which foster involvement and interaction within the Tennessee, Alabama and Mississippi school systems of the Consortium. It serves students, parents, higher learning institutions, and involved industry.

Permanent Civil
Service Workvearg

CENTER MANAGEMENT AND OPERATIONS 75

Center Management and Operations Support is defined as that support provided to all SSC organizations which cannot be identified exclusively to a single program or project. The civil service personnel involved are:

Director and Staff - The Installation Director, Deputy Director, and immediate staff, e.g., Legal, Equal Opportunity, and Public Affairs.

Manaeement Support - Those who provide information and management services supporting all levels of Center management, both program and functional.

Operations Support - Those who manage or provide for the operation and maintenance of institutional facilities, buildings, systems and equipment.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
I.	PERSONNEL AND RELATED COSTS	13,688	15.641	14.096	14.710
	A. COMPENSATION AND BENEFITS	13,349	13,909	13,819	14,380
	1. COMPENSATION	10,948	11,359	11,233	11,645
	2. BENEFITS	2,401	2,550	2,586	2,735
	B. SUPPORTING COSTS	339	1,732	277	330
	1. TRANSFER OF PERSONNEL	4	180	125	145
	2. INVESTIGATIVE SERVICES	52	1,376	12	23
	3. PERSONNEL TRAINING	283	176	140	162
II.	TRAVEL	576	681	547	569
	A. PROGRAM TRAVEL	305	284	290	302
	B. SCIENTIFIC AND TECHNICAL DEVELOPMENT TRAVEL	103	185	98	102
	C. MANAGEMENT AND OPERATIONS TRAVEL	168	212	159	165
	TOTAL, FUND REQUIREMENTS	14,264	16,322	14,643	15,279

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
	(Thousands of Dollars)			

Explanation of Fund Requirements

I.	PERSONNEL AND RELATED COSTS	13.688	15.641	14.096	14.710
A.	Compensation and Benefits	13,349	13,909	13,819	14,380
1.	Compensation	10,948	11,359	11,233	11,645

The decrease in the 1993 Current Estimate from the 1993 Budget Estimate is due to the Congressional Budget reductions. The 1994 Budget Estimate increase is due to full year funding of the 1993 pay raise, normal salary growth for promotions, within grades, and merit pay, offset by the "Executive Order 12839" FTE reduction.

2.	Benefits	2,401	2,550	2,586	2,735

The increase between the 1993 Current Estimate and the 1993 Budget Estimate reflects changes in FERS, TSP and FICA costs. The 1994 Budget Estimate increase reflects full year funding of the 1993 pay raise, increases in retirement and health benefits, offset by Executive Order reductions in FTE.

B.	Supporting Costs	339	1.732	277	330
1.	Transfer of Personnel	4	180	125	145

This supporting costs category includes movement of household goods, subsistence and temporary expenses, real estate costs and miscellaneous moving expenses related to change of duty station. The decrease in the 1993 Current Estimate from the 1993 Budget Estimate reflects a reduction in the number of hires. The 1994 Estimate reflects an increase due to inflation and a new hire using these relocation benefits.

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
	(Thousands of Dollars)			
2. Investigative Services	52	1,376	12	23

The FY 1993 Budget Estimate reflects the cancellation of the Project Core conversion program and the transfer of security investigations from Headquarters to the centers. The 1994 Estimate reflects new hires requiring these investigations.

3. Personnel Training	283	176	140	162

The purpose of the SSC training program is to continue to develop the skills and knowledge of civil service employees in order to more efficiently support center roles and missions. In 1992 a "Learning Center" was developed at Stennis Space Center. Courses purchased for the "Learning Center" will be used in 1993 and subsequent years. The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to funding constraints. The 1994 Budget Estimate restores deferred 1993 training.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
	Explanation of Fun Requirements				
II.	TRAVEL	576	681	547	569
	A. Program Travel	305	284	290	302

The 1994 Budget Estimate maintains 1993 levels of operation.

	B. Scientific and Technical Development Travel	103	185	98	102

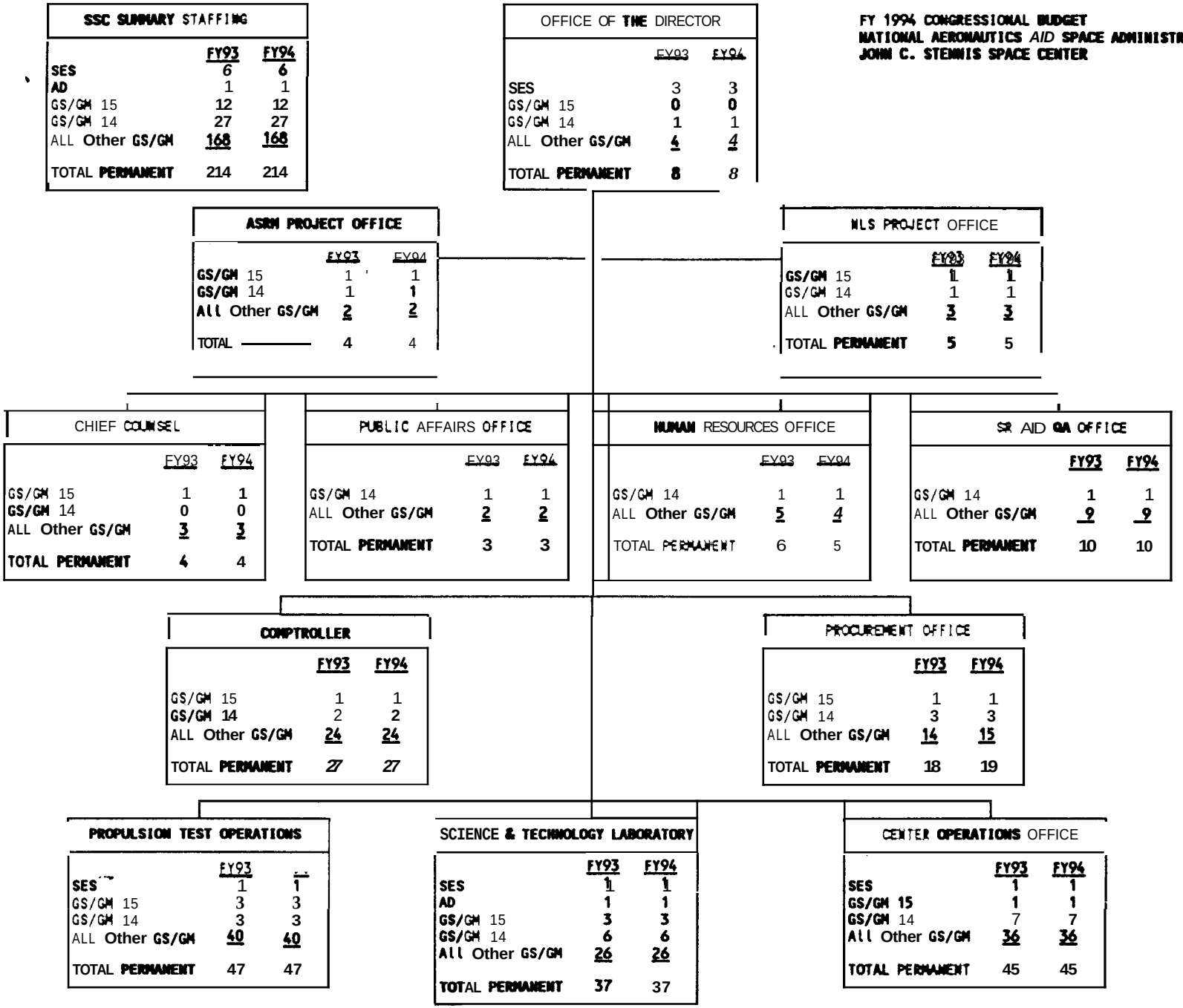
The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to required budget reductions.
The increase from the 1993 Current Estimate to the 1994 Budget Estimate is due to inflation.

	C. Management and Operations Travel	168	212	159	165

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to required budget reductions.
The increase from the 1993 Current Estimate to the 1994 Budget Estimate is due to inflation.

ORGANIZATION CHART

FY 1994 CONGRESSIONAL BUDGET
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN C. STENNIS SPACE CENTER



RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1994 ESTIMATES

GODDARD SPACE FLIGHT CENTER

CENTER ROLES AND MISSIONS

PRINCIPAL ROLES:

Earth Orbiting Spacecraft Development, On-Orbit Servicing And Flight Operations - Develops spacecraft propulsion and supporting technology.

Space And Earth Sciences - Implements science experiments in astronomy, solar physics, high energy astrophysics, solar terrestrial studies, and atmospheric, oceanic, and land processes.

Tracking And Data Acquisition Systems And Support Operations - Plans, develops, and operates tracking facilities and provides data processing, communications, and mission control; supports earth orbital spacecraft, aeronautical, balloon and sounding rocket research; and implements Shuttle networks. Operates the Tracking and Data Relay Satellite System (TDRSS).

Launch Range And Research Airport Management And Operations - Plans and operates the Wallops launch range, and the associated aircraft and research airport.

Launch Services - Procures and manages the medium and small class expendable launch vehicle services.

Sounding Rocket Development, Procurement, And Operations - Manages and supports the NASA sounding rocket program.

Balloon Program - Manages the NASA balloon program providing technical oversight and direction to the balloon activities conducted for universities and other scientific groups and directs the research and development effort for balloon related technologies.

Spacelab Payload Development - Develops, integrates, and processes data for Spacelab payloads in astrophysics, solar terrestrial physics, and astronomy.

Attached Payloads - Manages and develops low-cost reusable carrier systems which accommodate a variety of payloads to be flown on Shuttle missions.

Information Systems - Applies advanced computer and information systems technology in support of science programs, including data management, scientific computing, networking, archiving, and distribution.

SUPPORTING ROLES:

Planetary Science - Develops and applies techniques for the investigation and analysis of planetary atmospheres.

Aerospace Flight Test Support - Plans and conducts launches of scientific payloads, aeronautical tests and other research, development and related activities as requested by elements of NASA, the Department of Defense, other Government agencies, and the worldwide scientific community.

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

GODDARD	FY 1992 ACTUAL	FY 1993 BUDGET ESTIMATE	FY 1993 CURRENT ESTIMATE	FY 1994 BUDGET ESTIMATE
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS	9	*0*	*0*	0 *
SPACE FLIGHT PROGRAMS	75	136	71	57
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	66	62	61	48
SPACE SHUTTLE PRODUCTION AND OPERATIONS	9	74	10	9
LAUNCH SERVICES	51	0	53	52
SPACE SCIENCE	1,462	1,420		1,414
PHYSICS AND ASTRONOMY	1,347	1,304		1,287
PLANETARY EXPLORATION	115	116	121	127
LIFE SCIENCES/	1	1	1	0
LIFE AND MICROGRAVITY SCIENCES	0	0	0	1
SPACE APPLICATIONS/	915	990	991	0
MISSION TO PLANET EARTH	0	0	0	1,003
ADVANCED CONCEPTS AND TECHNOLOGY	83	96	49	48
SPACE RESEARCH AND TECHNOLOGY	69	83	41	41
COMMERCIAL PROGRAMS	14	13	8	7
AERONAUTICAL RESEARCH AND TECHNOLOGY	13	16	18	19
TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY	0	0	0	0
SPACE EXPLORATION	8	0	3	0
SAFETY RELIABILITY AND QUALITY ASSURANCE	15	10	14	15
ACADEMIC PROGRAMS	0	0	0	0
TRACKING AND DATA PROGRAMS	607	592	594	574
SUBTOTAL DIRECT	3,239	3,261	3,230	3,183
CENTER MANAGEMENT AND OPERATIONS	749	724	724	711
SUBTOTAL (FULL-TIME PERMANENT)	3,988	3,985	3,954	3,894
OTHER CONTROLLED FTE'S	26	32	24	24
TOTAL, FLU-TIME EQUIVALENTS	4,014	4,017	3,978	3,918
CORE	0	07	0	0
TOTAL, PROGRAM PLAN	4.014	4.104	3,978	3.910

*UNDER REVIEW

PROGRAM DESCRIPTION

	Permanent Civil Service Workyears
SPACE FLIGHT PROGRAMS	57
SPACE TRANSPORTATION (DEVELOP)	48

Goddard Space Flight (GSFC) Center manages development of the Hitchhiker, a reusable carrier system which provides increased flight opportunities with reduced leadtime while maximizing Shuttle load factors and minimizing spaceflight costs.

SPACE SHUTTLE PRODUCTION AND OPERATIONS	9

GSFC manages and coordinates the Agency's Get Away Special (GAS) program. Center personnel coordinate with international experimenters (including private citizens, high schools, universities, and industry) who have procured payload space on the Shuttle.

LAUNCH SERVICES	52

GSFC has management responsibility for the small and medium class expendable launch vehicle services used to put a wide variety of spacecraft into a broad spectrum of orbits. The Delta launch vehicle will be used to launch the Global Geospace Science (GGS) Wind and Polar missions and the cooperative Radarsat mission. The Pegasus vehicle will launch the Total Ozone Mapping Mission (TOMS) and Fast Auroral Snapshot Explorer (FAST).

	Permanent Civil Service Workyears
SPACE SCIENCE	1,414
PHYSICS AND ASTRONOMY	1,287

GSFC manages activities in the following discipline areas: gamma ray astronomy, X-ray astronomy, ultraviolet and optical astronomy, infrared and radio astronomy, particle astrophysics, solar physics, interplanetary physics, planetary magnetospheres, and astrochemistry. This includes development of major spacecraft missions, such as the GGS Wind and Polar spacecraft, the X-ray Timing Explorer, the Advanced Composition Explorer, and the Fast Auroral Snapshot (FAST) and Submillimeter Wave Astronomy Satellite (SWAS) small explorers. GSFC is also responsible for conducting the mission operations for a variety of operating spacecraft (e.g., Compton Gamma Ray Observatory, Cosmic Background Explorer, etc.), including the operations, maintenance and servicing of the Hubble Space Telescope, including the first servicing mission planned for early FY 1994. Other activities include managing NASA's sounding rocket and scientific balloon program, as well as, the National Space Science Data Center.

PLANETARY EXPLORATION	127

The science activity studies the physics of interplanetary and planetary space environments. The GSFC research group participates in Galileo, Mars Observer, and CASSINI instrument development, mission operations, and data analysis activity.

LIFE AND MICROGRAVITY SCIENCES	1

GSFC provides support for the mission management for the Diffuse X-Ray Spectrometer (DXS) program.

Permanent Civil
Service Workyears

MISSION TO PLANET EARTH **1.003**

Program activities include activities in land, oceans, and atmospheric sciences. GSFC is engaged in three major types of activities in these areas: research and technology, flight projects, and data analysis. The research and technology effort is directed toward solving major problems involving conceptual instrument design and testing, mission payload studies, and developing flight mission concepts. Mathematical models are designed and constructed to study the global circulation of the atmosphere; the geopotential fields (gravity and magnetic) of the Earth; the processes of the oceans; the physical characteristics of the Earth's vegetation cover, water, and land; and the interaction between the Earth's atmosphere, hydrosphere, and cryosphere.

Flight project responsibilities include operating weather satellite missions for the National Oceanic and Atmospheric Administration (NOAA) and conducting correlation measurements from balloons, sounding rockets, aircraft, and ground installations.

A continuing major thrust is the development of the Earth Observing System (EOS). The primary objective of the Earth Observing System is to record global change and to observe regional-to-global processes . Utilizing several satellites, EOS will document global change over a fifteen year period to provide long-term, consistent data sets for use in modeling and understanding global processes. This process and modeling research effort will provide the basis for establishing predictive global change models for policy makers' and scientists' use in formulating strategies to manage human impacts on global processes such as the greenhouse effect, ozone depletion, and deforestation.

A component of the Mission to Planet Earth concept, managed by GSFC is the Earth Probes program. Earth Probes are an extension of the Explorer concept and are designed to provide a platform for investigations in Earth science requiring special orbital characteristics. As part of the Earth Probe program, GSFC will manage the

Permanent Civi1
Service Workvears

development of the Total Ozone Mapping Spectrometer (TOMS). Another Earth Probe is the Tropical Rainfall Mapping Mission (TRMM).

Earth Science data analysis activities involve the formulation, analysis, and distribution of data received from satellites. Data from the Earth Radiation Budget Experiment will continue to be collected for study of geographical and seasonal variations of the Earth's radiation budget.

Management and operation of the Agency's scientific computing and archival facilities will continue. The NASA Center for Computational Services (NCCS) serves the scientific community with its super-computing resources.

ADVANCED CONCEPTS AND TECHNOLOGY..... 48

SPACE RESEARCH AND TECHNOLOGY..... 41

The Space Research and Technology program activities provide advanced technology for future NASA missions while advancing the state-of-the-art in many science and engineering disciplines. The development program encompasses technologies targeted at improved space borne instruments, on-board spacecraft systems and subsystems, and end-to-end systems. In addition, GSFC is involved in flight test and demonstration of the integration of new technology on Space Shuttle and Expendable Launch Vehicle (ELV) systems.

COMMERCIAL PROGRAMS..... 7

This program's two primary goals are to promote and develop private sector investment in space-based technologies and to promote industrial productivity through the transfer to the nation's commercial sector of technologies that derive from NASA's Research and Development (R&D) programs and activities. To achieve its goals, Commercial Programs works to establish innovative partnerships and innovative approaches leading to new commercial enterprises, products, and services.

Permanent Civil Service Workyear

AERONAUTICAL RESEARCH AND TECHNOLOGY **19**

The Wallops Flight Facility is used to conduct flight studies of new approach and landing procedures using the latest in guidance equipment and techniques, pilot information displays, human factors data, and terminal area navigation. Flight tests of wind shear detection systems will also be supported.

SAFETY, RELIABILITY AND QUALITY ASSURANCE **15**

GSFC has responsibility for the Agency's electronic parts standards activity, including preparing and maintaining the NASA Standard Parts List (NSPL); evaluating new parts technology for potential additions to the NSPL; and for preparing qualification criteria to be used by vendors.

TRACKING AND DATA PROGRAMS **574**

Research and technology involves the investigation and development of advanced systems and techniques for spacecraft communications and tracking, command and control, and data acquisition and processing. The primary objectives are to apply technology and develop advanced capabilities to meet the tracking and data processing requirements of new missions and to improve the cost effectiveness and reliability of flight mission support.

The operational part of the Space Tracking and Data Systems program involves five main areas: operation of the Tracking and Data Relay Satellite System (TDRSS); mission control, data processing, and orbit/attitude computation support; the Space Tracking and Data Network (STDN); the NASA Communications (NASCOM) Network; and the Aeronautics, Balloons and Sounding Rocket Program.

The NASA Communications Network links the stations of the Deep Space Network (DSN), STDN, TDRSS, and other tracking and data acquisition elements with control centers and data processing and computation centers.

	Permanent Civil Service Workyear
CENTER MANAGEMENT AND OPERATIONS SUPPORT.....	711

Center Manaeement and ODerations Support - Provides services to all GSFC organizations. The civil service personnel include:

Director and staff - The Center Director, Deputy Director, organization Directors and staff; e. g., Comptroller, Chief Counsel, Personnel Officer, Equal Opportunity Officer, and Public Affairs officer.

Manaeement Support - Provide information and control services supporting all levels of Center management, both program and functional. Specific functions include resources and financial management, contracting and procurement, property management, and management systems and analysis.

ODerations Support - Provide for the operation and maintenance of institutional facilities, buildings, systems, and equipment, including those who manage or provide technical services.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
I.	PERSONNEL AND RELATED COSTS	242,933	256,800	250.746	259.247
A.	COMPENSATION AND BENEFITS	238.391	247.065	247.592	255.291
1.	COMPENSATION	202,727	208,948	208,536	213,898
2.	BENEFITS	35,664	38,117	39,056	41,393
B.	SUPPORTING COSTS	4,542	9,735	3,154	3,956
1.	TRANSFER OF PERSONNEL	627	1,030	430	641
2.	INVESTIGATIVE SERVICES	0	4,725	40	115
3.	PERSONNEL TRAINING	3,915	3,980	2,684	3,200
II.	TRAVEL	7,056	7,780	7,100	7,064
A.	PROGRAM TRAVEL	5,791	6,447	5,825	5,789
B.	SCIENTIFIC AND TECHNICAL DEVELOPMENT TRAVEL	718	748	720	720
C.	MANAGEMENT AND OPERATIONS TRAVEL	547	585	555	555
	TOTAL, FUND REQUIREMENTS	249.989	264.580	257.846	266.311

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
	Explanation of Fund Requirements				
I.	**PERSONNEL AND RELATED COSTS**	**242,933**	**256,800**	**250,746**	**259,247**
	A. Compensation and Benefits	**238,391**	**247,065**	**247,592**	**255,291**
	1. Compensation	202,727	208,948	208,536	213,898

The 1993 Current Estimate includes funding for a full year of the 1992 pay raise, the January 1993 pay raise, full year funding for promotions, within grade increases and other personnel actions, offset by Executive Order reductions reductions. The 1994 Budget Estimate reflects a full year of the 1993 pay raise, normal salary growth for personnel actions and the impact of the "Executive Order 12839" FTE reduction.

	2. Benefits	35,664	38,117	39,056	41,393

The increase from the 1993 Budget Estimate to the 1993 Current Estimate includes anticipated increases in the FERS retirement program and repricing of health benefits. The 1994 Estimate is due to full year funding of the 1993 pay raise, increased health and retirement benefits, offset by Executive Order FTE reductions.

	B. Supporting Costs	**4,542**	**9,735**	**3,154**	**3,956**
	1. Transfer of Personnel	627	1,030	430	641

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate results from the need to reduce discretionary costs in order to minimize the FTE reductions imposed by the constrained budget. The 1994 Estimate reflects an increase for anticipated new hires eligible for these benefits.

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
	(Thousands of Dollars)			
2. Investigative Services	0	4,725	40	115

The 1993 Current Estimate includes the transfer of the security investigation responsibility from Headquarters to the centers and reflects the cancellation of the Project Core conversion program. The 1994 Estimate includes investigations deferred from 1993.

3. Personnel Training	3,915	3,980	2,684	3,200

The purpose of the GSFC's training program is to continue to develop the skills and knowledge of civil service employees in order to more efficiently support center roles and missions. The decrease in the 1993 Current Estimate from the 1993 Budget Estimate is a result of budget constraints. The 1994 Budget Estimate reflects the restoration of training deferred from 1993.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
	Explanation of Fund Requirements				
II.	**TRAVEL**	*7,056*	*7,780*	*7,100*	*7,064*
	A. Program Travel	*5,791*	*6,447*	*5,825*	*5,789*

The decrease in the *1993* Current Estimate incorporates required budget reductions. The *1994* Budget Estimate holds travel to essentially the same levels as *1993*.

	B. Scientific and Technical Development Travel	*718*	*748*	*720*	*720*

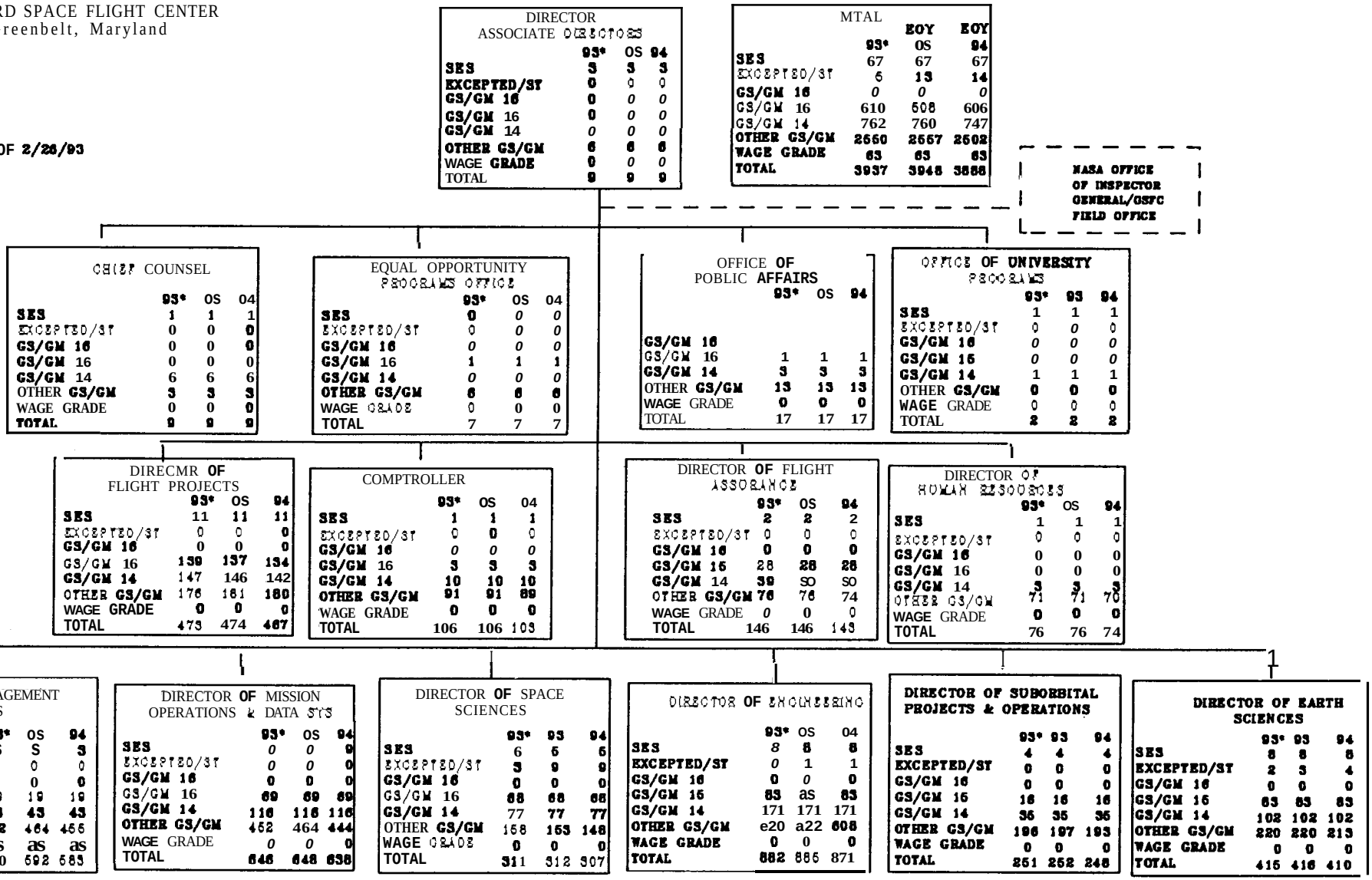
The decrease in the *1993* Current Estimate incorporates required budget reductions.

	C. Management and Operations Travel	*547*	*585*	*555*	*555*

The decrease in the *1993* Current Estimate incorporates required budget reductions.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GODMRD SPACE FLIGHT CENTER
Greenbelt, Maryland

'ONBOARD AS OF 2/26/93



APPROVED_____ DATE _____

RESEARCH **AND PROGRAM** MANAGEMENT

FISCAL YEAR 1994 ESTIMATES

AMES RESEARCH CENTER

CENTER ROLES AND MIS

PRINCIPAL ROLES:

Aeronautical Research and Technology - Conduct theoretical, experimental, and flight research in fundamental aerodynamics, high-performance aircraft, rotorcraft, powered-lift technology, low-speed vehicle systems, guidance and control, flight simulation, aircraft automation, and human-vehicle interactions.

Transatmospheric Research and Technology - Conduct research in aeronautics and space disciplines to provide the technology for vehicles capable of flight to orbit and/or hypersonic cruise.

Gravitational Biology and Biomedical Research - Conduct of research to understand the mechanisms by which gravity affects the function and development of living systems, and to develop options for preventing health and psychophysiological problems during and following extended spaceflight.

Advanced Life Support - Develop the physical/chemical and regenerative life support technologies and extravehicular activity systems essential to exploration and extended presence in space.

Exobiology - Conduct research on the origin, evolution, and distribution of life and life-related molecules on Earth and throughout the universe.

Earth System Science - Conduct research, develop airborne and spaceborne instruments, and manage projects in the science of Earth's atmosphere and ecosystems.

Materials and Structures - Conduct tests of thermal protection systems and materials responses to aerodynamic heating with particular emphasis on high-temperature space or hypersonic vehicle structures.

Computational Fluid Dynamics - Definition of new hardware and software systems and application of these systems to aeronautical and other related areas.

Computing and Communications - Conduct research to accelerate the development and application of high performance computing technologies.

Information Sciences - Conduct research on the technological development of intelligent, autonomous systems for support of planetary, astrophysical and aeronautical missions.

Fluid and Thermal Physics - Develop thermal analysis methods and thermal protection systems required for aerospace planes, planetary entry probes, and orbital transfer vehicles.

Hieh Speed Aerodynamics - develop computational tools and experimental techniques for the design of subsonic and supersonic lifting surfaces and the integration of the propulsion systems with airframes.

SUPPORTING ROLES:

Space Transportation System - Provide prime and contingency landing support to the Space Transportation System. Provide critical sustaining engineering services, such as landing simulations, and thermal protection systems.

Airborne Research and Applications - Conduct airborne research and applications experiments.

Physics and Astronomy - Conduct research in infrared astronomy, astrophysics, theoretical studies, and planetary science and atmospheres.

Planetary Exploration - Develop instruments and systems for planetary exploration studies. Conduct mission operations and data analysis support for the Pioneer program and the Galileo atmospheric probe.

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

AMES	FY 1992 ACTUAL	FY 1993 BUDGET ESTIMATE	FY 1993 CURRENT ESTIMATE	FY 1994 BUDGET ESTIMATE
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS	7	10	7	7 *
SPACE FLIGHT PROGRAMS	37	26	24	15
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	0	0	0	0
SPACE SHUTTLE PRODUCTION AND OPERATIONS	37	26	24	15
LAUNCH SERVICES	0	0	0	0
SPACE SCIENCE	101	120	106	104
PHYSICS AND ASTRONOMY	67	81	77	76
PLANETARY EXPLORATION	34	39	29	28
LIFE SCIENCES/	180	175	166	0
LIFE AND MICROGRAVITY SCIENCES	0	0	0	163
SPACE APPLICATIONS/	90	89	87	0
MISSION TO PLANET EARTH	0	0	0	85
ADVANCED CONCEPTS AND TECHNOLOGY		197	195	198
SPACE RESEARCH AND TECHNOLOGY		192	192	195
COMMERCIAL PROGRAMS	3	5	3	3
AERONAUTICAL RESEARCH AND TECHNOLOGY	999	1,000	1,002	1,001
TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY	10	10	10	9
SPACE EXPLORATION	0	2	0	0
SAFETY RELIABILITY AND QUALITY ASSURANCE	26	26	32	32
ACADEMIC PROGRAMS	0	0	0	0
TRACKING AND DATA PROGRAMS	27	28	27	27
SUBTOTAL DIRECT	1,685	1,683	1,656	1,641
CENTER MANAGEMENT AND OPERATIONS	571	542	555	544
SUBTOTAL (FULL-TIME PERMANENT)	2,256	2,225	2,211	2,185
OTHER CONTROLLED FTES	28	40	31	32
TOTAL, FULL-TIME EQUIVALENTS	2,284	2,265	2,242	2,217
CORE	0	134	0	0
TOTAL, PROGRAM PLAN	2,284	2.399	2.242	2,217

*UNDER REVIEW

PROGRAM DESCRIPTION

	Permanent civil Service Workyears
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS	**7**

Currently under review.

SPACE FLIGHT PROGRAMS	**15**
SPACE SHUTTLE PRODUCTION AND OPERATIONS	15

Dryden Flight Research Facility (DFRF) is one of two primary recovery sites for the Space Shuttle missions. Upon landing, Dryden provides orbiter convoy operations and servicing support and support in mating the orbiter to the Shuttle Carrier Aircraft.

SPACE SCIENCE	**104**
PHYSICS AND ASTRONOMY	76

Provides support for the airborne astronomy program with the C-141 Kuiper Airborne Observatory Aircraft (KAO). This aircraft is operated as a flying astronomical observatory for research conducted by various university teams. Ames Research Center (ARC) manages and operates a variety of other operational aircraft which serve as unique national and international facilities for research.

ARC has an active program in airborne and spaceborne infrared technology. This program utilizes the unique capabilities of infrared astronomy to investigate the nature and evolution of astronomical systems. Definition activity continues for the Stratospheric Observatory for Infrared Astronomy (SOFIA), a future candidate new initiative.

	Permanent Civil Service Workyears
PLANETARY EXPLORATION	28

Basic research and project management activities in support of solar system exploration are carried out in this program. Project management and scientific support for Pioneers 6 through 11, and the Galileo Probe will continue.

ARC continues an active program of laboratory, computational, and theoretical studies to develop basic atmospheric planetary modeling concepts and obtain the necessary physical data to interpret spacecraft observations of planetary atmospheres and relate these data to the atmosphere of the Earth.

Advanced studies of instrumentation are carried out for potential deployment and on future planetary missions to Mars, Venus, Pluto, comets and asteroids. Astronomical and laboratory studies contribute fundamental data on solar system chemistry and the chemical evolution of planetary atmospheres.

LIFE AND MICROGRAVITY SCIENCES	**163**

Conducts research to understand the effects of space flight on living systems, and understand the origin, evolution, and distribution of life and life-related chemicals on Earth and elsewhere in the universe. ARC also manages non-human biological experiments in space. Research on the effects of gravity on living systems from simple cells to humans will be conducted using spaceflight experiments, ground simulation, and hypergravity facilities.

The Life Support Program manages the integration of work in physical/chemical and regenerative life support systems with the objective of developing closed life support systems so as to reduce dependency on resupply. The Controlled Ecological Life Support System (CELSS) activities will be the focal point for this research. Biospherics research will continue to enhance the understanding of the biological aspects of global conditions and biochemical processes on Earth.

	Permanent Civil Service Workyears
MISSION TO PLANET EARTH.....	85

The atmospheric research program combines the expertise of the Center personnel and university scientists in the development of computer models for the atmosphere and in the measurement of atmospheric constituents and properties from aircraft platforms.

The program of applied research and development to enhance the use of remote and in-situ sensing technology for various Earth resources applications will be continued.

ADVANCED CONCEPTS AND TECHNOLOGY.....	198
SPACE RESEARCH AND TECHNOLOGY.....	195

Basic research focuses on entry technology materials research, aerothermodynamics research, and intelligent systems technology. Focused research supports future space transportation and space science missions, and the definition of advanced technology for space platforms. The Space R&T program includes activities in the areas of spaceborne processors and science sensor technology, development of technologies for humans in space, and robotics and artificial intelligence.

Space Shuttle orbiter experiments are supported to study advanced materials and evaluate possible cost and weight reduction for the thermal protection system for Shuttle and advanced space transportation systems. The infrared astronomy program emphasizes infrared detector research and cryogenics technology. The Space human factors program will continue applied research in space human factors to ensure high levels of productivity and operational safety for future space missions.

	Permanent Civil Service Workvears
COMMERCIAL PROGRAMS.....	3

This program's two primary goals are to promote and develop private sector investment in space-based technologies and to promote industrial productivity through the transfer to the nation's commercial sector of technologies that derive from NASA's Research and Development (R&D) programs and activities. To achieve its goals, Commercial Programs works to establish innovative partnerships and innovative approaches leading to new commercial enterprises, products, and services.

AERONAUTICAL RESEARCH AND TECHNOLOGY.....	**1001**

The program in aeronautics has three basic elements: generic research and technology, vehicle specific technology, and aeronautical support to other government agencies and to industry. These three elements form a coherent and interdependent program to meet the objectives of providing a technology base for the development of subsonic and high speed transport aircraft, hypersonic aircraft, advanced rotorcraft and powered lift configurations, and the improvement of the operational performance and efficiency of high performance aircraft.

The human factors program will continue basic and applied research in human performance, computational models for human machine visual perception, and development of advanced pilot-vehicle interface concepts to promote the safety and efficiency of aircraft operations.

As part of the Federal High Performance Computing and Communications Program, ARC will lead the computational aeroscience project to develop the necessary computational technology for the numerical simulation of aerospace vehicles in order to optimize design and analyze flight characteristics.

ARC provides 8,000 to 9,000 hours per year of wind tunnel and 5,000 hours per year of vertical Motion Simulator occupancy time in support of both commercial and military aircraft development, as well as support for large NASA projects.

	Permanent Civil Service Workvears
TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY	9

Transatmospheric Research and Technology activities focus on developing wind tunnel and flight analysis for use in evaluating the performance of a hypersonic/transatmospheric vehicle.

SAFETY, RELIABILITY, AND QUALITY ASSURANCE	32

The Safety, Reliability, and Quality Assurance (SR&QA) function provides support to Center projects. The Safety and Health Office provides institutional safety to the Center and the Reliability and Quality Assurance Office establishes and implements policies and procedures as an component of project development.

TRACKING AND DATA PROGRAMS	27

ARC will continue to operate and maintain the NASA Western Aeronautical Test Range proving radar, tracking and data processing, communications, and telemetry for a variety of aeronautical and aerospace programs.

CENTER MANAGEMENT AND OPERATIONS SUPPORT	544

Center Management and Operations provides support or services to all ARC organizations which cannot be identified exclusively to a single program or project. The civil service personnel involved are as follows:

Director and Staff · The Center Director, Deputy Director, Associate Directors, and the immediate staff; e.g., Chief Counsel, Patent Counsel, Comptroller, and Directors for Procurement, Equal Opportunity, Public Affairs, and Advanced Space Technology.

Management Support · Provides information and control services supporting all areas of the Center, both program and functional.

Operations Support · Provides for the operation and maintenance of institutional facilities, buildings, systems, equipment, and technical services.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
I.	PERSONNEL AND RELATED COSTS	154,023	166,900	158,935	164,332
	A. COMPENSATION AND BENEFITS	150,511	156.748	156.719	161.014
	1. COMPENSATION	126,993	132,219	131,279	133,525
	2. BENEFITS	23,518	24,529	25,440	27,489
	B. SUPPORTING COSTS	3,512	10,152	2,216	3,318
	1. TRANSFER OF PERSONNEL	630	240	396	984
	2. INVESTIGATIVE SERVICES	0	7,416	200	206
	3. PERSONNEL TRAINING	2,882	2,496	1,620	2,128
II.	TRAVEL	4.837	5,328	3,941	5,197
	A. PROGRAM TRAVEL	3,065	3,322	2,508	3,362
	B. SCIENTIFIC AND TECHNICAL DEVELOPMENT TRAVEL	682	802	527	676
	C. MANAGEMENT AND OPERATIONS TRAVEL	1,090	1,204	906	1,159
	TOTAL, FUND REQUIREMENTS	158,860	172,228	152,876	169,529

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
	(Thousands of Dollars)			

Explanation of Fund Requirements

I.	PERSONNEL AND RELATED COSTS	154.023	166.900	158.935	164.332
	A. Compensation and Benefits	150,511	156,748	156,719	161,014
	1. Compensation	126,993	132,219	131,279	133,525

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is the result of Congressional budget and Executive Order reductions. The 1994 Budget Estimate increase reflects full year funding of the 1993 pay raise, normal salary growth due to promotions, within grades, and merit pay, offset by the "Executive Order 12839" FTE reduction.

	2. Benefits	23,518	24,529	25,440	27,489

The increase from the 1993 Budget Estimate to the 1993 Current Estimate is the result of repricing health insurance and retirement program components. The 1994 Budget Estimate increase includes full year funding of the 1993 pay raise, increases to health benefits and retirement costs, offset by Executive Order FTE reductions.

	B. Supporting Costs	3,512	10,152	2,216	3,318
	1. Transfer of Personnel	630	240	396	984

This supporting costs category includes movement of household goods, subsistence and temporary expenses, real estate costs and miscellaneous moving expenses related to change of duty station. The increase from the 1993 Budget Estimate to the 1993 Current Estimate reflects additional hires eligible for these benefits. The 1994 Budget Estimate increase reflects hires eligible to use relocation services.

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
	(Thousands of Dollars)			
2. Investigative Services	0	7,416	200	206

The 1993 Current Estimate includes the transfer of the security investigation responsibility from Headquarters to the centers and reflects the cancellation of the Project Core conversion program. The 1994 Budget Estimate continues this activity at 1993 levels.

3. Personnel Training	2,882	2,496	1,620	2,128

The purpose of the ARC training program is to continue to develop the skills and knowledge of civil service employees in order to more efficiently support center roles and missions. The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is the result of budget constraints. The 1994 Budget Estimate restores training deferred from 1993.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
	Explanation of Fund Requirements				
II.	TRAVEL	4,837	5,328	3,941	5,197
	A. Program Travel	3,065	3,322	2,508	3,362

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to budget reductions. The increase from the 1993 Current Estimate to the 1994 Budget Estimate is increased support for major flight programs and includes inflation.

	B. Scientific and Technical Development Travel	682	802	527	676

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to budget reductions. The increase between the 1993 Current Estimate and the 1994 Budget Estimate is due to increased participation in research symposia; and provides opportunities to keep the highly technical workforce abreast of "state-of-the-art" technical issues and advancements in the aerospace; scientific; and research and development communities.

	C. Management and Operations Travel	1,090	1,204	906	1,159

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to budget reductions. The increase from the 1993 Current Estimate to the 1994 Budget Estimate is to provide increased functional management oversight and continual improvement reviews.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

AMES RESEARCH CENTER

ORGANIZATION AND STAFFING CHART

STAFFING SUMMARY

	93	94
SES	47	41
GS/GM 16	0	0
GS/GM 15	251	230
GS/GM 14	416	407
OTHER GS/GM	1199	1178
WAGE	276	278
TOTAL	2179	2140

OFFICE OF THE DIRECTOR

	93	94
SES	7	5
GS/GM 16	0	0
GS/GM 15	15	15
GS/GM 14	16	17
OTHER GS/GM	52	52
WAGE	0	0
TOTAL	92	89

OFFICE OF THE COMPTROLLER

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	3	3
OTHER GS/GM	83	82
WAGE	0	0
TOTAL	89	88

DIRECTOR OF ADMINISTRATION

	93	94
SES	2	2
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	0	0
OTHER GS/GM	3	3
WAGE	0	0
TOTAL	5	5

DIRECTOR OF ENGINEERING AND TECHNICAL SERVICES

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	1	1
OTHER GS/GM	2	2
WAGE	0	0
TOTAL	6	6

DIRECTOR OF AEROSPACE SYSTEMS

	93	94
SES	2	2
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	1	1
OTHER GS/GM	2	2
WAGE	0	0
TOTAL	5	5

DIRECTOR OF FLIGHT OPERATIONS AND RESEARCH

	93	94
SES	1	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	1	1
OTHER GS/GM	1	1
WAGE	0	0
TOTAL	4	3

DIRECTOR OF AEROPHYSICS

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	3	3
GS/GM 14	1	1
OTHER GS/GM	3	3
WAGE	0	0
TOTAL	8	8

DIRECTOR OF SPACE RESEARCH

	93	94
SES	2	2
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	2	2
OTHER GS/GM	3	3
WAGE	0	0
TOTAL	7	7

DIRECTOR OF DRYDEN FLIGHT RESEARCH FACILITY

	93	94
SES	3	3
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	3	3
OTHER GS/GM	14	14
WAGE	0	0
TOTAL	21	21

LOGISTICS AND SECURITY DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	1	0
OTHER GS/GM	15	15
WAGE	5	5
TOTAL	22	21

HUMAN RESOURCES DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	2	2
OTHER GS/GM	33	31
WAGE	0	0
TOTAL	37	35

ACQUISITION DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	4	4
GS/GM 14	5	5
OTHER GS/GM	74	74
WAGE	0	0
TOTAL	83	83

TECHNICAL INFORMATION DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 16	0	0
GS/GM 14	1	1
OTHER GS/GM	17	17
WAGE	3	3
TOTAL	21	21

MANAGEMENT PROGRAMS OFFICE

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	1	1
OTHER GS/GM	5	5
WAGE	0	0
TOTAL	6	6

FACILITIES PLANNING OFFICE

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	1	1
OTHER GS/GM	1	1
WAGE	0	0
TOTAL	[illegible]	2

INFORMATION AND COMMUNICATIONS SYSTEMS DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	5	4
GS/GM 14	9	8
OTHER GS/GM	50	49
WAGE	0	0
TOTAL	64	61

SYSTEMS ENGINEERING DIVISION

	93	94
SES	-	-
GS/GM 16	0	0
GS/GM 15	5	7
GS/GM U	a	m
OTHER GS/GM	86	84
WAGE	0	0
TOTAL	116	112

TECHNICAL SERVICES DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	1	1
OTHER GS/GM	37	36
WAGE	88	89
TOTAL	127	126

MAINTENANCE MANAGEMENT OFFICE

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM U	1	1
OTHER GS/GM	2	2
WAGE	0	0
TOTAL	3	3

12-FOOT WIND TUNNEL OFFICE

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 16	1	1
GS/GM U	4	4
OTHER GS/GM	6	6
WAGE	0	0
TOTAL	11	11

MOFFETT TRANSITION OFFICE

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	2	2
OTHER GS/GM	0	0
WAGE	0	0
TOTAL	2	2

AIRCRAFT TECHNOLOGY DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	11	9
GS/GM 14	15	15
OTHER GS/GM	30	29
WAGE	0	0
TOTAL	57	54

FULL-SCALE AERODYNAMICS RESEARCH DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	9	9
GS/GM 14	18	18
OTHER GS/GM	37	36
WAGE	20	20
TOTAL	85	84

AEROSPACE HUMAN FACTORS RESEARCH DIVISION

	93	94
SES	2	2
GS/GM 16	0	0
GS/GM 15	12	11
GS/GM 14	14	14
OTHER GS/GM	19	19
WAGE	0	0
TOTAL	47	46

FLIGHT SYSTEMS AND SIMULATION RESEARCH DIVISION

	93	94
SES	2	2
GS/GM 16	0	0
GS/GM 15	18	14
GS/GM 14	29	28
OTHER GS/GM	53	52
WAGE	0	0
TOTAL	99	96

INFORMATION SCIENCES DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 16	9	I
GS/GM 14	14	14
OTHER GS/GM	23	23
WAGE	0	0
TOTAL	47	46

SCIENCE AND APPLICATIONS AIRCRAFT DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	4	4
GS/GM 14	15	15
OTHER GS/GM	22	22
WAGE	0	0
TOTAL	42	42

AMES RESEARCH AIRCRAFT OPERATIONS DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	5	5
GS/GM 14	5	5
OTHER GS/GM	23	23
WAGE	39	39
TOTAL	76	76

NUMERICAL AERODYN. SIMULATION SYSTEMS DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	11	11
GS/GM 14	8	8
OTHER GS/GM	20	20
WAGE	0	0
TOTAL	40	40

AERODYNAMICS DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	6	6
GS/GM 14	23	23
OTHER GS/GM	47	47
WAGE	20	20
TOTAL	97	97

COMPUTER SYSTEMS & RESEARCH DIVISION

	93	94
SES	1	0
GS/GM 16	0	0
GS/GM 15	4	4
GS/GM 14	4	4
OTHER GS/GM	22	22
WAGE	0	0
TOTAL	31	30

FLUID DYNAMICS DIVISION

	93	94
SES	2	1
GS/GM 16	0	0
GS/GM 16	19	19
GS/GM U	33	33
OTHER GS/GM	20	20
WAGE	0	0
TOTAL	74	73

THERMOSCIENCES DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	11	11
GS/GM 14	21	21
OTHER GS/GM	33	33
WAGE	10	10
TOTAL	76	76

SETI OFFICE

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	2	2
OTHER GS/GM	3	3
WAGE	0	0
TOTAL	8	8

ADVANCED LIFE SUPPORT DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	9	8
GS/GM 14	7	7
OTHER GS/GM	17	16
WAGE	0	0
TOTAL	34	32

SPACE SCIENCE DIVISION

	93	94
SES	4	4
GS/GM 16	0	0
GS/GM 15	15	14
GS/GM 14	17	16
OTHER GS/GM	21	21
WAGE	0	0
TOTAL	57	55

SPACE PROJECTS DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	4	4
GS/GM 14	18	18
OTHER GS/GM	12	12
WAGE	0	0
TOTAL	34	34

SPACE LIFE SCIENCES PAYLOADS OFFICE

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	5	5
GS/GM 14	13	13
OTHER GS/GM	23	22
WAGE	0	0
TOTAL	41	40

LIFE SCIENCE DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	8	8
GS/GM 14	7	7
OTHER GS/GM	14	14
WAGE	0	0
TOTAL	29	29

EARTH SYSTEMS SCIENCE DIVISION

	93	94
SES	2	2
GS/GM 16	0	0
GS/GM 15	10	9
GS/GM 14	13	13
OTHER GS/GM	24	24
WAGE	0	0
TOTAL	49	48

CENTRIFUGE FACILITY PROJECT

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	3	2
GS/GM 14	8	8
OTHER GS/GM	28	27
TOTAL	39	37

CHIEF ENGINEER'S OFFICE

	93	94
SES	1	0
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	0	0
OTHER GS/GM	0	0
WAGE	0	0
TOTAL	1	0

DRYDEN AEROSPACE PROJECTS OFFICE

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	5	5
GS/GM 14	5	5
OTHER GS/GM	5	5
WAGE	0	0
TOTAL	16	16

DRYDEN ADMIN. & TECH. SERVICES DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	I	4
OTHER GS/GM	66	66
WAGE	0	0
TOTAL	73	72

DRYDEN FLIGHT OPERATIONS DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	6	I
GS/GM 14	I	I
OTHER GS/GM	81	79
WAGE	91	92
TOTAL	187	184

DRYDEN RESEARCH ENGINEERING DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 16	17	16
GS/GM 14	31	31
OTHER GS/GM	89	89
WAGE	0	0
TOTAL	137	136

LIQUID HYDEOGEN STRUCTURE TEST FACILITY

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	1	1
OTHER GS/GM	0	0
WAGE	0	0
TOTAL	2	2

92-1029
12/31/91

RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1994 ESTIMATE

LANGLEY ESEARCH CENTER

CENTER ROLES AND MISSIONS

PRINCIPAL ROLES:

Aeronautical Technology · Conduct advanced research in fundamental aerodynamics; high-speed, highly maneuverable aircraft technology; hypersonic propulsion; guidance and controls; acoustics; and structures and materials.

Transport Aircraft and General Aviation Technoloev - Develop a technology base for improving transport, general aviation, and commuter aircraft.

Space Transportation Technoloev - Develop technology for future space transportation systems by analyzing configuration options for a space shuttle replacement system and an Expendable Launch Vehicle.

Space Systems Technoloev - Perform research to improve operational efficiency and to develop concepts for advanced space systems.

Sensors and Data Acauisition Technology - Develop a technology base for sensors and data acquisition devices.

Information Svstems Technology - Develop the technology for highly reliable, fault-tolerant software and data systems for flight critical aerospace vehicle applications and for high performance spaceflight storage systems.

Aero-Space Plane Technology - Combine aeronautics and space disciplines to provide the technology for design of vehicles capable of airbreathing flight from Earth to orbit.

Technoloev Demonstration Flight Experiments - Define and develop space technology experiments relevant to materials, structures, aerothermodynamics, automated assembly, control and dynamics of space structures; large space antenna assemblies; advanced space transportation systems; and on-orbit assembly and servicing facilities.

SUPPORTING ROLES:

Rotorcraft Technology - Development of the technology base to advance rotorcraft performance.

Atmospheric Sciences - Develop, apply and manage improved techniques for atmospheric sensing.

Earth System Research - Conduct mission analyses, develop sensors, and utilize remote sensing data contributing to model development.

Automation and Robotics - Develop technology for telerobotic and autonomous robotic systems and evaluate application of resulting systems to future space mission needs.

Computational Fluid Dynamics - Develop and apply computational techniques to examine complex, 3D fluid-dynamic phenomena over a wide range of aerodynamic conditions, vehicle configurations, and missions.

Space Radiation Exposure - Conduct research on the interaction of solar and galactic cosmic radiation in order to estimate effects on human exposure.

DISTRIBUTION OF FUL – TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

LANGLEY	FY 1992 ACTUAL	FY 1993 BUDGET ESTIMATE	FY 1993 CURRENT ESTIMATE	FY 1994 BUDGET ESTIMATE
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS	22	37	24	24 *
SPACE FLIGHT PROGRAMS	29	15	31	29
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	20	15	31	29
SPACE SHUTTLE PRODUCTION AND OPERATIONS	9	0	0	0
LAUNCH SERVICES	0	0	0	0
SPACE SCIENCE	1	2	0	0
PHYSICS AND ASTRONOMY	0	0	0	0
PLANETARY EXPLORATION	1	2	0	0
LIFE SCIENCES/	7	9	7	0
LIFE AND MICROGRAVITY SCIENCES	0	0	0	19
SPACE APPLICATIONS/	239	264	218	0
MISSION TO PLANET EARTH	0	0	0	205
ADVANCED CONCEPTS AND TECHNOLOGY	564	536	519	490
SPACE RESEARCH AND TECHNOLOGY	549	521	505	476
COMMERCIAL PROGRAMS	15	15	14	14
AERONAUTICAL RESEARCH AND TECHNOLOGY	1,266	1,271	1,346	1,376
TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY	90	60	56	25
SPACE EXPLORATION	0	3	0	0
SAFETY RELIABILITY AND QUALITY ASSURANCE	6	13	6	8
ACADEMIC PROGRAMS	0	0	0	0
TRACKING AND DATA PROGRAMS	0	0	0	0
SUBTOTAL DIRECT	2,244	2,210	2,207	2,176
CENTER MANAGEMENT AND OPERATIONS	702	715	707	693
SUBTOTAL (FULL–TIME PERMANENT)	2,946	2,925	2,914	2,869
OTHER CONTROLLED FTES	16	19	14	19
TOTAL, FULL–TIME EQUIVALENTS	2,962	2,944	2,928	2,888
CORE	0	43	0	0
TOTAL, PROGRAM PLAN	2,962	2,987	2,928	2,888

*UNDER REVIEW

PROGRAM DESCRIPTION

	Permanent Civil Service Workyears
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS	**24**

Currently under review.

SPACE FLIGHT PROGRAMS	**29**
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	29

Research will be conducted on the advanced manned launch system studies which provide the Agency long-range planning for a second generation Space Shuttle anticipated after the year 2000. Continued research is being conducted on the HL-20 Lifting Body Configuration for application to a near-term Personnel Launch System and a Space Station Assured Crew Return Vehicle.

LIFE SCIENCES AND MICROGRAVITY SCIENCES	**19**

The space radiation exposure program supports existing and future manned space efforts in order to more accurately assess astronaut radiation exposures and body shielding factors.

MISSION TO PLANET EARTH	**205**

The space applications program provides a national research capability for understanding the environment and for developing atmospheric sensing systems and techniques. Langley Research Center (LaRC) has been designated a Primary Data and Archival Center for Earth Radiation and Atmospheric Chemistry for the Earth Observing System (EOS). LaRC will continue to study the Earth's atmosphere to assess changes caused by man and to determine whether or not there is any associated change in the chemical composition of the stratosphere that would change the transmission of solar ultraviolet radiation to the Earth's surface.

A significant improvement in the understanding of man's impact on the atmosphere and climate will be obtained from the combination of LaRC developed statistical/theoretical models and the comprehensive global data set provided by present spaceborne sensors. LaRC has the responsibility for data processing and analysis of the Earth Radiation Budget Experiment and the Halogen Occultation Experiment (HALOE).

This program provides basic research in order to establish scientific and engineering bases to evaluate the potential of crystal growth in space for advanced electronic and electro-optical devices.

ADVANCED CONCEPTS AND TECHNOLOGY..... ***490***

SPACE RESEARCH AND TECHNOLOGY..... ***476***

The space research and technology program applies multi-discipline expertise to current and future technology requirements. Longer range studies are directed at defining the technology requirements for future space systems and missions. In the Civil Space Technology Initiative (CSTI), LaRC supports the Space Transportation, Operations, Space Platforms and Science thrusts. Mission and system analyses are directed toward the establishment of requirements for future space systems and their supporting infrastructure.

Materials research is conducted to establish and demonstrate the technology of advanced materials in a wide variety of space applications. Environmental effects on the mechanical and physical properties of materials are being studied utilizing specialized facilities and laboratories.

The goal of research in structures is to provide validated analysis and design methodology, design concepts, and dynamics and control methodology required for efficient long-life space transportation and payload structures. Research will be initiated on integrated controls software that will require application of advanced numerical techniques and computer hardware.

Extensive research in electronic component technology, spacecraft guidance and control, large space antenna systems, automation and robotics, sensor technology, and information systems technology is also being

Permanent Civi1
Service Workvears

conducted. The Aerothermodynamics Research Program provides an aerodynamic/aeroheating analysis capability via ground-based testing, flight data validation, and CFD analysis which supports the design of efficient future space transportation vehicle concepts.

COMMERCIAL PROGRAMS..... *14*

This program's two primary goals are to promote and develop private sector investment in space-based technologies and to promote industrial productivity through the transfer to the nation's commercial sector of technologies that derive from NASA's Research and Development (R&D) programs and activities. To achieve its goals, Commercial Programs works to establish innovative partnerships and innovative approaches leading to new commercial enterprises, products, and services.

AERONAUTICAL RESEARCH AND TECHNOLOGY..... **1.376**

The aeronautical research and technology program applies discipline research to current and future technology requirements and demonstrations of technology applications. The aerodynamics activity covers extensive theoretical and experimental activities. Basic work in fluid and flight mechanics involves theoretical and experimental determination of aerodynamic flows and complex aircraft motions.

Critical environmental compatibility issues are studied in order to make decisions on future high speed civil transport technology and development programs. Technology options for realization of practical hypersonic and transatmospheric flight are also being examined.

The materials and structures effort is directed at the development of new and improved structural materials, fabrication processes, and structural design technology to improve the structural efficiency, reliability, and durability.

The research program in computer science is directed at computer networks, concurrent systems design, software engineering, and fault-tolerant software techniques for improved system reliability. Controls and guidance research includes programs to advance technology in aircraft guidance and navigation, aircraft control

Permanent civil
Service Workyears

systems, cockpit systems integration and interfacing techniques, and performance validation and verification methods. Research continues in aircraft noise prediction and abatement and wind shear avoidance.

TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY **25**

Activity includes study of supersonic combustion of both ramjets and other advanced airbreathing propulsion systems; advanced materials for high-temperature applications; development of large reusable structures for aerospace vehicles; and studies to define and understand the integration of advanced technologies into a future class of horizontal takeoff and landing vehicles capable of operating to orbit and/or hypersonic cruise within the atmosphere.

SAFETY, RELIABILITY, AND QUALITY ASSURANCE **8**

The Safety, Reliability, and Quality Assurance program provides independent assessment activities which reduce program risk.

CENTER MANAGEMENT AND OPERATIONS **693**

Center Management and Operations provides services or support to all LaRC organizations. The civil service personnel involved are:

Director and Staff - The Center Director, Deputy Director, Associate Director, Assistant Director and immediate staff; e.g., Comptroller, Director of Procurement, Equal Opportunity, and External Affairs.

Management Support - Provide information and control services supporting all levels of Center management, both program and functional.

Operations Support - Provide for the operation and maintenance of institutional facilities, buildings, systems, and equipment.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
	PERSONNEL AND REIATED COSTS	168,170	174,500	175.709	181.617
A.	COMPENSATION AND BENEFITS	165,526	169,969	173,847	179,306
1.	COMPENSATION	140,294	143,433	146,280	149,364
2.	BENEFITS	25,232	26,536	27,567	29,942
B.	SUPPORTING COSTS	2,644	4,531	1,862	2,311
1.	TRANSFER OF PERSONNEL	560	131	219	228
2.	INVESTIGATIVE SERVICES	0	2,350	88	190
3.	PERSONNEL TRAINING	2,084	2,050	1,555	1,893
II.	TRAVEL	4,681	5,165	3,892	5,000
A.	PROGRAM TRAVEL	2,962	3,562	2,474	3,179
B.	SCIENTIFIC AND TECHNICAL DEVELOPMENT TRAVEL	1,134	1,113	942	1,210
C.	MANAGEMENT AND OPERATIONS TRAVEL	585	490	476	611
	TOTAL, FUND REQUIREMENTS	172.851	179.665	179.601	186.617

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Bstimate
		(Thousands of Dollars)			
	Explanation of Fund Requirements				
I.	**PERSONNEL AND RELATED COSTS**	**168,170**	**174,500**	**175,709**	**181,617**
	A. Compensation and Benefits	**165,526**	**169,969**	**173,847**	**179,306**
	1. Compensation	**140,294**	**143,433**	**146,280**	**149,364**

The increase from the 1993 Budget Estimate to the 1993 Current Estimate is due primarily to the loss of turnover savings. The Current Estimate includes funding for a full year of the 1992 pay raise, the 1993 pay raise, and full year funding for promotions, within grade increases and other personnel actions. The 1994 Budget Estimate reflects full year funding of the 1993 pay raise, normal salary growth for personnel actions, offset by the "Executive Order 12839" FTE reduction.

	2. Benefits	**25,232**	**26,536**	**27,567**	**29,942**

The increase from the 1993 Budget Estimate to the 1993 Current Estimate reflects the calculation of benefits on a much larger salary base as discussed in the compensation area. The 1994 Budget Estimate includes increases for FERS, FICA, Thrift and health benefits, offset by Executive Order FTE reductions.

	B. Supporting Costs	**2,644**	**4,531**	**1,862**	**2,311**
	1. Transfer of Personnel	**560**	**131**	**219**	**228**

This supporting costs category includes movement of household goods, subsistence and temporary expenses, costs associated with purchase and sale of real estate and miscellaneous moving expenses related to change of duty station. The increase from the 1993 Budget Estimate to the 1993 Current Estimate is based on new hires eligible for these benefits. The 1994 Budget Estimate maintains the same level as in 1993.

	1992 Actual	1993 Budget Estimate	1993 Current Bstimate	1994 Budget Estimate
	(Thousands of Dollars)			
2. Investigative Services	0	2,350	88	190

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate reflects the cancellation of the Project Core conversion effort and the transfer of the security investigation responsibility from Headquarters. The 1994 Budget Estimate includes delayed 1993 investigations and background checks for new hires in 1994.

3. Personnel Training	2,084	2,050	1,555	1,893

The purpose of the LaRC training program is to continue to develop the skills and knowledge of civil service employees in order to more efficiently support center roles and missions. The decrease from the 1993 Budget Estimate to the 1993 Current Estimate reflects reduced funding due to budget constraints. The 1994 Budget Estimate reflects the restoration of training deferred from 1993.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			

Explanation of Fund Requirements

II.	TRAVEL	4,681	5,165	3,892	5,000
	A. Program Travel	2,962	3,562	2,474	3,179

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is a result of budget reductions. The increase from the 1993 Current Estimate to the 1994 Budget Estimate is to provide support for increased aeronautical program activity.

	B. Scientific and Technical Development Travel	1,134	1,113	942	1,210

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is a result of budget reductions. The increase from the 1993 Current Estimate to the 1994 Budget Estimate is due to increased participation in research symposia; and provides opportunities to keep the highly technical workforce abreast of "state-of-the-art" technical issues and advancements in the aerospace; scientific; and research and development communities.

	C. Management and Operations Travel	585	490	476	611

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to budget reductions. The increase from the 1993 Current Estimate to the 1994 Budget Estimate provides support for increased site reviews and management oversight.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

LANGLEY RESEARCH CENTER

ORGANIZATION AND STAFFING CHART

STAFFING SUMMARY

	93	94
SES	47	47
GS/GM 16	0	0
GS/GM 15	289	289
GS/GM 14	366	371
OTHER GS/GM	2146	2142
WAGE	6	6
TOTAL	2904	2835

OFFICE OF THE DIRECTOR

	93	94
SES	7	7
GS/GM 16	0	0
GS/GM 15	3	4
GS/GM 14	2	3
OTHER GS/GM	22	22
WAGE	0	0
TOTAL	34	36

OFFICE OF DIRECTOR FOR ELECTRONICS

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	0	1
OTHER GS/GM	3	3
WAGE	0	0
TOTAL	6	7

OFFICE OF DIRECTOR FOR STRUCTURES

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	1	1
OTHER GS/GM	2	2
WAGE	0	0
TOTAL	4	4

OFFICE OF DIRECTOR FOR AERONAUTICS

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	1	1
OTHER GS/GM	4	4
WAGE	0	0
TOTAL	8	8

OFFICE OF DIRECTOR FOR MANAGEMENT OPERATIONS

	93	94
SES	2	2
GS/GM 16	0	0
GS/GM 15	4	3
GS/GM 14	5	5
OTHER GS/GM	8	9
WAGE	0	0
TOTAL	19	19

OFFICE OF DIRECTOR FOR SYS ENG & OPERATIONS

	93	94
SES	2	2
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	2	2
OTHER GS/GM	4	4
WAGE	0	0
TOTAL	8	8

OFFICE OF DIRECTOR FOR SPACE

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	1	1
OTHER GS/GM	3	3
WAGE	0	0
TOTAL	6	6

OFFICE OF DIRECTOR FOR FLIGHT SYSTEMS

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	1	1
OTHER GS/GM	3	3
WAGE	0	0
TOTAL	7	7

OFFICE OF THE COMPTROLLER

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	0	0
OTHER GS/GM	0	0
WAGE	0	0
TOTAL	1	1

ANALYSIS AND COMPUTAT'N DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	9	9
GS/GM 14	12	11
OTHER GS/GM	83	80
WAGE	0	0
TOTAL	105	101

INSTRUMENT RESEARCH DIVISION

	93	94
SES	2	1
GS/GM 16	0	0
GS/GM 15	11	10
GS/GM 14	19	18
OTHER GS/GM	102	102
WAGE	0	0
TOTAL	134	131

FLIGHT ELECTRONICS DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	12	11
GS/GM 14	22	21
OTHER GS/GM	83	80
WAGE	0	0
TOTAL	119	113

PROJECTS DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	10	10
GS/GM 14	13	13
OTHER GS/GM	18	18
WAGE	0	0
TOTAL	42	42

STRUCTURAL MECHANICS DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	8	8
GS/GM 14	13	11
OTHER GS/GM	43	41
WAGE	0	0
TOTAL	62	58

STRUCTURAL DYNAMICS DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	14	13
GS/GM 14	18	16
OTHER GS/GM	42	41
WAGE	0	0
TOTAL	75	71

STRUCTURES TECH PROGRAM OFFICE

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	3	3
GS/GM 14	1	1
OTHER GS/GM	2	2
WAGE	0	0
TOTAL	6	6

MATERIALS DIVISION

	93	94
SES	2	2
GS/GM 16	0	0
GS/GM 15	13	13
GS/GM 14	16	16
OTHER GS/GM	37	35
WAGE	0	0
TOTAL	68	66

ACOUSTICS DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	11	11
GS/GM 14	9	9
OTHER GS/GM	30	28
WAGE	0	0
TOTAL	51	49

ADVANCED VEHICLES DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	9	9
GS/GM 14	4	4
OTHER GS/GM	23	23
WAGE	0	0
TOTAL	37	37

APPLIED AERODYNAMICS DIVISION

	93	94
SES	1	2
GS/GM 16	0	0
GS/GM 15	7	7
GS/GM 14	21	20
OTHER GS/GM	76	67
WAGE	0	0
TOTAL	105	96

FLIGHT APPLICATIONS DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	8	8
GS/GM 14	14	12
OTHER GS/GM	51	52
WAGE	0	0
TOTAL	74	73

FLUID MECHANICS DIVISION

	93	94
SES	2	2
GS/GM 16	0	0
GS/GM 15	16	15
GS/GM 14	26	24
OTHER GS/GM	55	57
WAGE	0	0
TOTAL	99	98

MANAGEMENT SUPPORT DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	4	4
OTHER GS/GM	44	44
WAGE	0	0
TOTAL	49	49

HUMAN RESOURCES MANAGEMENT DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	0	1
GS/GM 14	6	5
OTHER GS/GM	41	41
WAGE	0	0
TOTAL	47	47

BUSINESS DATA SYSTEMS DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	4	4
OTHER GS/GM	11	11
WAGE	0	0
TOTAL	16	16

ACQUISITION DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	8	7
OTHER GS/GM	76	77
WAGE	0	0
TOTAL	87	86

RESEARCH INFO. & APPLICATIONS DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	4	4
OTHER GS/GM	65	66
WAGE	9	5
TOTAL	79	76

SYSTEMS SAFETY, QUALITY AND RELIABILITY DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	3	3
GS/GM 14	5	5
OTHER GS/GM	33	33
WAGE	0	0
TOTAL	42	42

FABRICATION DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	6	6
OTHER GS/GM	290	285
WAGE	0	0
TOTAL	298	293

FACILITIES PROGRAM DEVELOPMENT OFFICE

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	3	3
OTHER GS/GM	5	5
WAGE	0	0
TOTAL	10	10

SYSTEMS ENGINEERING DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	11	10
GS/GM 14	14	15
OTHER GS/GM	104	102
WAGE	0	0
TOTAL	130	128

FACILITIES ENGINEERING DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	13	12
GS/GM 14	14	14
OTHER GS/GM	91	92
WAGE	0	0
TOTAL	119	119

OPERATIONS SUPPORT DIVISION

	93	94
SES	0	0
GS/GM IS	0	0
GS/GM 15	8	8
GS/GM 14	6	6
OTHER GS/GM	405	405
WAGE	0	0
TOTAL	412	412

8 FT HIGH TEMP. TUNNEL SHAKEDOWN PROJECT OFFICE

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	3	3
GS/GM 14	2	2
OTHER GS/GM	1	1
WAGE	0	0
TOTAL	6	6

* **SPACE STATION FREEDOM OFFICE**

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	8	8
GS/GM 14	8	8
OTHER GS/GM	24	24
WAGE	0	0
TOTAL	41	41

ATMOSPHERIC SCIENCES DIVISION

	93	94
SES	3	3
GS/GM 16	0	0
GS/GM 15	21	20
GS/GM 14	23	22
OTHER GS/GM	46	41
WAGE	0	0
TOTAL	92	86

SPACE SYSTEMS DIVISION

	93	94
SES	1	2
GS/GM 16	0	0
GS/GM 15	17	16
GS/GM 14	20	20
OTHER GS/GM	51	45
WAGE	0	0
TOTAL	89	83

SPACE EXPLOR INITIATIVE OFFICE

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	3	3
OTHER GS/GM	2	2
WAGE	0	0
TOTAL	7	7

INFORMATION SYSTEMS DIVISION

	93	94
SES	1	0
GS/GM 16	0	0
GS/GM 15	11	16
GS/GM 14	11	10
OTHER GS/GM	66	64
WAGE	0	0
TOTAL	79	74

GUIDANCE & CONTROL DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	14	12
GS/GM 14	20	20
OTHER GS/GM	43	42
WAGE	0	0
TOTAL	78	75

FLIGHT MANAGEMENT DIVISION

	93	94
SES	1	1
GS/GM 16	0	0
GS/GM 15	6	6
GS/GM 14	12	10
OTHER GS/GM	32	35
WAGE	0	0
TOTAL	53	52

FINANCIAL MANAGEMENT DIVISION

	93	94
SES	0	0
GS/GM IS	0	0
GS/GM 15	1	1
GS/GM 14	3	3
OTHER GS/GM	44	42
WAGE	0	0
TOTAL	48	46

PROGRAMS & RESOURCES DIVISION

	93	94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	3	3
OTHER GS/GM	17	16
WAGE	0	0
TOTAL	21	19

NATIONAL AERO-SPACE PLANE OFFICE

	93	94
SES	3	3
GS/GM IS	0	0
GS/GM 15	6	6
GS/GM 14	6	6
OTHER GS/GM	7	7
WAGE	0	0
TOTAL	22	24

* Currently under review.

Lewis
Research Center

RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1994 ESTIMATES

LEWIS RESEARCH CENTER

CENTER ROLES AND MISSIONS

PRINCIPAL ROLES:

Aeronautical Research and Technology - Conducts aeropropulsion research and technology in fundamental aeropropulsion disciplines and aeronautical propulsion technologies.

Transatmospheric Research and Technology - Conducts aeronautics and space research to provide the technology for a future class of vehicles capable of horizontal takeoff to orbit and/or hypersonic cruise.

Space Station Freedom - UNDER REVIEW

Communications - Develops high-risk technologies required in space communications for future space systems operated by NASA, U.S. industry, and other U.S. government agencies.

Launch Services - Procures and operates intermediate and large class expendable launch vehicle services for NASA and other government agencies.

Space Propulsion Systems Technology - Develops and enhances the technology base for advanced nuclear and electric high and low thrust primary and auxiliary propulsion systems.

Space Energy Processes and Systems Technology - Develop and maintains the technology base for space power and energy conversion systems.

In-Space Flight Experiments - Conducts ground-based and in-space microgravity science experiments in combustion, fluid physics, and materials and also develops flight experiments in the areas of space power, propulsion, and communications technologies.

Commercialization of Space - Promotes the commercialization of space by providing technical support to the Centers for the Commercial Development of Space and by increasing the awareness of U.S. industry of commercial space opportunities.

Technology Transfer - Plans, organizes, and facilitates the transfer of NASA-developed technology to the non-aerospace community.

SUPPORTING ROLES:

Energy Processes and Systems Technology - Manages research and technology projects for terrestrial propulsion systems.

High Performance Computing and Communications - Conducts research to develop necessary computational technology for the numerical simulation of propulsion systems.

DISTRIBUTION OF FULL-TIME EQUIVALENT (FTE) WORKYEARS BY PROGRAM

LEWIS	FY 1992 ACTUAL	FY 1993 BUDGET ESTIMATE	FY 1993 CURRENT ESTIMATE	FY 1994 BUDGET ESTIMATE
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS	374	400	402	402 *
SPACE FLIGHT PROGRAMS	9	60	7	7
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	4	5	4	4
SPACE SHUTTLE PRODUCTION AND OPERATIONS	5	55	3	3
LAUNCH SERVICES	74	0	72	66
SPACE SCIENCE	0	0	0	0
PHYSICS AND ASTRONOMY	0	0	0	0
PLANETARY EXPLORATION	0	0	0	0
LIFE SCIENCES/	0	0	0	0
LIFE AND MICROGRAVITY SCIENCES	0	0	0	210
SPACE APPLICATIONS/	240	230	264	0
MISSION TO PLANET EARTH	0	0	0	34
ADVANCED CONCEPTS AND TECHNOLOGY	551	573	513	494
SPACE RESEARCH AND TECHNOLOGY	514	550	476	455
COMMERCIAL PROGRAMS	37	23	37	39
AERONAUTICAL RESEARCH AND TECHNOLOGY	924	915	933	965
TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY	21	30	10	10
SPACE EXPLORATION	28	0	0	0
SAFETY RELIABILITY AND QUALITY ASSURANCE	3	2	2	2
ACADEMIC PROGRAMS	0	0	0	0
TRACKING AND DATA PROGRAMS	0	15	0	0
SUBTOTAL DIRECT	2,224	2,225	2,203	2,190
CENTER MANAGEMENT AND OPERATIONS	575	562	554	535
SUBTOTAL (FULL-TIME PERMANENT)	2,799	2,787	2,757	2,725
OTHER CONTROLLED FTE'S	42	44	44	45
TOTAL, FULL-TIME EQUIVALENTS	2,841	2,831	2,801	2,770
CORE	0	81	0	0
TOTAL, PROGRAM PLAN	2.841	2.912	2.801	2.770

*UNDER REVIEW

PROGRAM DESCRIPTION

	Permanent Civil Service Workyears
SPACE STATION AND NEW TECHNOLOGY INVESTMENTS.....	402

Currently under review.

SPACE FLIGHT PROGRAMS.....	7
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT.....	4

Studies are conducted which provide long-range planning for future launch systems and spacecraft.

SPACE SHUTTLE PRODUCTIONS AND OPERATIONS.....	3

Provides technology assessments & technology definition studies for future space operations in the areas of telecommunications and information management networks.

LAUNCH SERVICES.....	66

LeRC is responsible for procurement and management of commercial launch services for the intermediate (Atlas/Centaur and Titan 111) and large (Titan IV) class expendable launch vehicles in the NASA Mixed Fleet.

LIFE AND MICROGRAVITY SCIENCES.....	210

Activities consist of microgravity science and applications research; design and development, of space flight experiments; and operation of ground and space flight experiments in materials, combustion, fluid physics, and instrumentation.

Emphasis will continue in advanced design, development, and operation of microgravity experimental flight hardware and ground-based research and flight experiments in basic science and technology associated with materials, combustion, fluid physics phenomena, and power and propulsion technology.

	Permanent Civil Service Workyears
MISSION TO PLANET EARTH	*34*

LeRC manages operations for the Advanced Communications Technology Satellite.

ADVANCED CONCEPTS AND TECHNOLOGY.....	*494*
SPACE RESEARCH AND TECHNOLOGY.....	*455*

The program in space research and technology is coordinated with NASA mission planners to enable and enhance future NASA missions. The research is intended to provide advancements in satellite, platform and planetary power systems; to create new propulsion options for high- and low- thrust systems; to enable new capabilities in space communications and electronics; and to provide effective means to manage cryogenic fluids in microgravity.

The research and technology propulsion program supports the next generation of unmanned launch vehicles, the next generation of government and commercial satellites, and microsatellites and space platforms performing earth observation and exploration.

Space power programs are focused on enhanced micro- and full-size satellite power systems as well as revolutionary capability for deep space and planetary exploration.

The space communications program includes applied research and technology aimed at development of advanced concepts, technologies, and communications systems which meet the needs of NASA missions, Industry and other U.S. government agencies. Emphasis is on developing high data return from NASA missions using less mass and power and developing innovative, new and cost competitive commercial satellite communications services.

Space materials and structures research and technology emphasizes development of improved materials, advancement of structural analysis and life prediction, and development of long-life, reliable space mechanisms.

	Permanent Civil Service Workyears
COMMERCIAL PROGRAMS.....	39

This program's two primary goals are to promote and develop private sector investment in space-based technologies and to promote industrial productivity through the transfer to the nation's commercial sector of technologies that derive from NASA's Research and Development (R&D) programs and activities. To achieve its goals, Commercial Programs works to establish innovative partnerships and innovative approaches leading to new commercial enterprises, products, and services.

AERONAUTICAL RESEARCH AND TECHNOLOGY.....	**965**

The aeronautical research and technology program provides aerospace propulsion research and technology to enhance the technology base for developing advanced aeronautical propulsion systems in order to increase speed and range; improve fuel efficiency, operating cost, reliability and durability; and decrease environmental impact with respect to reduced emissions and noise.

The generic discipline research includes Internal Computational Fluid Mechanics (ICFM), instrumentation and controls technology, advanced materials, and computational structural mechanics.

Vehicle focused research and technology is directed at developing the propulsion technology for specific engines and propulsion systems. Applications for these focused propulsion systems research efforts include subsonic transports, commuters, supersonic cruise (High Speed Research), hypersonic aircraft, rotorcraft, general aviation, and high performance aircraft.

TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY.....	**10**

Activities are directed toward understanding and defining a class of airbreathing propulsion systems that are applicable to orbital accelerator and hypersonic cruise vehicles.

	Permanent Civil Service Workvears
SAFETY, RELIABILITY AND QUALITY ASSURANCE.....	2

Will continue to expand the research and technology activities being conducted in areas addressing risk management and SR&QA disciplines.

CENTER MANAGEMENT AND OPERATIONS.....	535

Center Management and Operations Support provides support to all LeRC organizations. The civil service personnel involved are:

Director and Staff - The Center Director, Deputy Director, and immediate staff, e.g., Comptroller, and Directors of Equal Opportunity, External Programs, Chief Counsel, Research Academy and Mission Safety and Assurance.

Manaeement Support - Those who provide information and control services supporting all levels of Center program and functional management.

Operations Support - Those who provide for the operation and maintenance of institutional facilities, buildings, systems, and equipment.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
I.	PERSONNEL AND RELATED COSTS	167,945	178,400	174,332	181,088
	A. COMPENSATION AND BENEFITS	165,108	172.793	171.939	179.052
	1. COMPENSATION	138,662	143,963	143,661	148,679
	2. BENEFITS	26,446	28,830	28,278	30,373
	B. SUPPORTING COSTS	2,837	5,607	2,393	2,036
	1. TRANSFER OF PERSONNEL	7	310	80	85
	2. INVESTIGATIVE SERVICES	0	2,575	166	173
	3. PERSONNEL TRAINING	2,830	2,722	2,147	1,778
II.	TRAVEL	4.381	4.738	4.002	4.681
	A. PROGRAM TRAVEL	2,873	3,154	2,659	3,115
	B. SCIENTIFIC AND TECHNICAL DEVELOPMENT TRAVEL	711	812	668	775
	C. MANAGEMENT AND OPERATIONS TRAVEL	797	772	675	791
	TOTAL, FUND REQUIREMENTS	172,326	183,138	178,334	185,769

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
	Explanation of Fund Requirements				
I.	PERSONNEL AND RELATED COSTS	167.945	178.400	174.332	181.088
A.	Compensation and Benefits	165,108	172,793	171,939	179.052
1.	Compensation	138,662	143,963	143,661	148,679

The decrease in the 1993 Current Estimate from the 1993 Budget Estimate reflects Congressional budget and Executive Order reductions. The 1994 Budget Estimate includes full year funding of the 1993 pay raise, normal salary growth for promotions, within grades and merit pay, offset by the "Executive Order 12839" FTE reduction.

2.	Benefits	26,446	28,830	28,278	30,373

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to a reduction in hiring caused by funding limitations and repricing of health benefits. The 1994 Budget Estimate increase reflects full year funding of the 1993 pay raise, increases in retirement benefit costs and health insurance, offset by Executive Order FTE reductions.

B.	Supporting Costs	2,837	5,607	2,393	2,036
1.	Transfer of Personnel	7	310	80	85

The decrease in the 1993 Budget Estimate to the 1993 Current Estimate is based on a hiring plan which indicates fewer hires eligible for these benefits. The 1993 and 1994 Budget is based on the hiring of co-op conversions.

2.	Investigative Services	0	2,575	166	173

The 1993 Current Estimate reflects a decrease from the 1993 Budget Estimate, resulting from the elimination of

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)		

the core conversions and the transfer of the security investigation responsibility from Headquarters to the centers. The 1994 Budget Estimate maintains the 1993 level of investigations.

3.	Personnel Training	2,830	2,722	2,147	1,778

The purpose of the LeRC training program is to continue to develop the skills and knowledge of civil service employees in order to more efficiently support center roles and missions. The 1993 Current Estimate reflects a decrease due to budget constraints. The 1994 Budget Estimate reflects a decrease due to budget constraints.

		1992 Actual	1993 Budget Bstimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
	Explanation of Fund Requirements				
II.	**TRAVEL**	4,381	4,738	4,002	4,681
	A. Program Travel	2,873	3,154	2,659	3,115

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to required budget reductions. The increase from the 1993 Current Estimate to the 1994 Budget Estimate is to support research experiments in conjunction with shuttle activities.

	B. Scientific and Technical Development Travel	711	812	668	775

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to required budget reductions. The increase from the 1993 Current Estimate to the 1994 Budget Estimate is due to increased participation in research symposia; and provides opportunities to keep the highly technical workforce abreast of "state-of-the-art" technical issues and advancements in the aerospace; scientific; and research and development communities.

	C. Management and Operations Travel	797	772	675	791

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to required budget reductions. The increase from the 1993 Current Estimate to the 1994 Budget Estimate provides continued functional management oversight and review activities.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

LEWIS RESEARCH CENTER

ORGANIZATION AND STAFFING CHART

STAFFING SUMMARY	'93	'94
SES	44	51
GS/GM 16	0	0
GS/GM 15	184	180
GS/GM 14	386	386
OTHER GS/GM	1796	1762
WAGE	330	296
TOTAL	2740	2673

OFFICE OF THE DIRECTOR

	'93	'94
SES	4	6
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	2	2
OTHER GS/GM	3	3
WAGE	0	0
TOTAL	9	11

ELECTRIC POWER INTEGRATION OFFICE

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	4	4
GS/GM 14	0	0
OTHER GS/GM	1	1
WAGE	0	0
TOTAL	5	5

OFFICE OF CHIEF SCIENTIST

	'93	'94
SES	3	3
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	2	2
OTHER GS/GM	1	1
WAGE	0	0
TOTAL	8	8

OFFICE OF SAFETY, RELIABILITY & QUALITY ASSURANCE

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	3	3
GS/GM 14	11	11
OTHER GS/GM	33	32
WAGE	0	0
TOTAL	48	46

OFFICE OF THE CHIEF COUNSEL

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	6	6
OTHER GS/GM	3	3
WAGE	0	0
TOTAL	11	11

OFFICE OF EQUAL OPPORTUNITY PGMS.

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	1	1
OTHER GS/GM	5	5
WAGE	0	0
TOTAL	6	6

OFFICE OF HEALTH SERVICES

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	0	0
OTHER GS/GM	3	3
WAGE	0	0
TOTAL	4	4

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AERONAUTICS DIRECTORATE

	'93	'94
SES	2	3
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	0	0
OTHER GS/GM	3	3
WAGE	0	0
TOTAL	6	7

AEROSPACE TECH. DIRECTORATE

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	0	0
OTHER GS/GM	1	1
WAGE	0	0
TOTAL	2	2

SPACE STATION SYSTEMS DIRECTORATE

	'93	'94
SES	3	3
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	3	3
OTHER GS/GM	2	2
WAGE	0	0
TOTAL	8	8

SPACE FLT. SYSTEMS DIRECTORATE

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	0	0
OTHER GS/GM	2	2
WAGE	0	0
TOTAL	3	3

ENGINEERING DIRECTORATE

	'93	'94
SES	2	2
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	0	0
OTHER GS/GM	2	2
WAGE	0	0
TOTAL	4	4

TECHNICAL SERVICES DIRECTORATE

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	0	0
OTHER GS/GM	1	1
WAGE	0	0
TOTAL	2	2

ADMINISTRATION & COMPUTER SERVICES DIRECTORATE

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	1	1
OTHER GS/GM	17	17
WAGE	0	0
TOTAL	21	21

OFFICE OF THE COMPTROLLER

	'93	'94
SES	0	1
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	0	0
OTHER GS/GM	0	0
WAGE	0	0
TOTAL	1	2

OFFICE OF EXTERNAL AFFAIRS

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	0	0
OTHER GS/GM	3	3
WAGE	0	0
TOTAL	4	4

ADVANCED PLANNING & ANALYSIS OFFICE

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	6	6
OTHER GS/GM	18	17
WAGE	0	0
TOTAL	27	26

MATERIALS DIVISION

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	18	18
GS/GM 14	24	23
OTHER GS/GM	82	80
WAGE	0	0
TOTAL	91	88

PROJECT CONTROL OFFICE

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	3	3
OTHER GS/GM	11	10
WAGE	0	0
TOTAL	15	14

ACTS PROJECT OFFICE

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	3	3
GS/GM 14	6	6
OTHER GS/GM	29	26
WAGE	0	0
TOTAL	39	36

ELECTRONIC & CONTROL SYSTEMS DIVISION

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	6	6
GS/GM 14	9	8
OTHER GS/GM	41	41
WAGE	0	0
TOTAL	56	56

FACILITY PLANNING OFFICE

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	2	2
OTHER GS/GM	5	5
WAGE	0	0
TOTAL	8	8

PERSONNEL DIVISION

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	2	1
OTHER GS/GM	35	34
WAGE	0	0
TOTAL	38	37

RESOURCES ANALYSIS & MANAGEMENT OFFICE

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	4	4
OTHER GS/GM	27	27
WAGE	0	0
TOTAL	32	32

INSTRUMENTATION & CONTROL TECH. OFFICE

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	7	7
GS/GM 14	7	6
OTHER GS/GM	36	36
WAGE	0	0
TOTAL	51	49

STRUCTURES DIVISION

	'93	'94
SES	3	3
GS/GM 16	0	0
GS/GM 15	10	10
GS/GM 14	14	13
OTHER GS/GM	38	38
WAGE	0	0
TOTAL	65	64

SYST. ENGINEERING & INTEGRATION OFFICE

	'93	'94
SES	0	1
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	17	16
OTHER GS/GM	6	6
WAGE	30	28
TOTAL	53	51

SPACE EXPERIMENTS DIVISION

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	7	7
GS/GM 14	16	14
OTHER GS/GM	46	46
WAGE	0	0
TOTAL	69	68

PROPULSION & FLUID SYSTEMS DIVISION

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	3	3
GS/GM 14	10	9
OTHER GS/GM	37	34
WAGE	0	0
TOTAL	51	47

TEST INSTALLATIONS DIVISION

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	1	1
OTHER GS/GM	119	117
WAGE	227	210
TOTAL	347	328

COMPUTER SERVICES DIVISION

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	8	8
GS/GM 14	21	21
OTHER GS/GM	114	112
WAGE	0	0
TOTAL	144	142

FINANCIAL MGMT. DIVISION

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	3	3
OTHER GS/GM	37	37
WAGE	0	0
TOTAL	41	41

INTERNAL FLUID MECHANICS DIVISION

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	16	15
GS/GM 14	27	27
OTHER GS/GM	53	53
WAGE	0	0
TOTAL	98	96

SPACE PROPULSION TECHNOLOGY DIVISION

	'93	'94
SES	2	2
GS/GM 16	0	0
GS/GM 15	6	6
GS/GM 14	16	16
OTHER GS/GM	66	64
WAGE	0	0
TOTAL	90	88

PHOTOVOLTAIC POWER MODULE DIVISION

	'93	'94
SES	0	1
GS/GM 16	0	0
GS/GM 15	6	5
GS/GM 14	8	8
OTHER GS/GM	36	37
WAGE	0	0
TOTAL	52	51

ADVANCED SPACE ANALYSIS OFFICE

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	2	2
GS/GM 14	8	7
OTHER GS/GM	26	26
WAGE	0	0
TOTAL	37	36

STRUCTURAL SYSTEMS DIVISION

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	3	3
GS/GM 14	6	6
OTHER GS/GM	43	42
WAGE	0	0
TOTAL	53	52

FACILITIES OPS. & MAINT. DIVISION

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	4	4
GS/GM 14	7	7
OTHER GS/GM	139	137
WAGE	0	3
TOTAL	150	146

LOGISTICS MGMT. DIVISION

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	1	1
OTHER GS/GM	29	28
WAGE	0	0
TOTAL	30	29

OFFICE OF UNIVERSITY PROGRAMS

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	0	0
OTHER GS/GM	2	2
WAGE	0	0
TOTAL	3	3

PROPULSION SYSTEMS DIVISION

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	15	14
GS/GM 14	28	28
OTHER GS/GM	71	69
WAGE	0	0
TOTAL	115	112

POWER TECHNOLOGY DIVISION

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	12	12
GS/GM 14	25	24
OTHER GS/GM	56	56
WAGE	0	0
TOTAL	94	93

ELECTRICAL SYSTEMS DIVISION

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	6	5
GS/GM 14	10	9
OTHER GS/GM	43	41
WAGE	0	0
TOTAL	60	56

CRYOGENIC FLUID TECHNOLOGY OFFICE

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	2	2
OTHER GS/GM	0	0
WAGE	0	0
TOTAL	2	2

ENGINEERING SUPPORT DIVISION

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	3	3
GS/GM 14	4	4
OTHER GS/GM	47	46
WAGE	0	0
TOTAL	54	53

FABRICATION SUPPORT DIVISION

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	1	1
OTHER GS/GM	63	60
WAGE	66	55
TOTAL	130	116

TECHNICAL INFORMATION SERVICES DIVISION

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	1	1
OTHER GS/GM	28	27
WAGE	2	2
TOTAL	31	30

OFFICE OF EDUCATIONAL PROGRAMS

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	0	0
OTHER GS/GM	11	11
WAGE	0	0
TOTAL	12	12

AEROPROPULSION FAC. & EXPTS. DIVISION

	'93	'94
SES	3	1
GS/GM 16	0	0
GS/GM 15	6	6
GS/GM 14	21	21
OTHER GS/GM	64	63
WAGE	0	0
TOTAL	92	91

SPACE ELECTRONICS DIVISION

	'93	'94
SES	2	2
GS/GM 16	0	0
GS/GM 15	7	7
GS/GM 14	16	16
OTHER GS/GM	60	60
WAGE	0	0
TOTAL	85	85

OPS. & SPECIAL PROJECTS DIVISION

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	5	4
GS/GM 14	5	5
OTHER GS/GM	36	35
WAGE	0	0
TOTAL	46	44

LAUNCH VEHICLES PROJECT OFFICE

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	3	3
GS/GM 14	9	8
OTHER GS/GM	8	8
WAGE	0	0
TOTAL	21	20

FACILITIES ENGINEERING DIVISION

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	4	4
GS/GM 14	13	13
OTHER GS/GM	61	60
WAGE	0	0
TOTAL	79	78

PROCUREMENT DIVISION

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	9	8
OTHER GS/GM	83	83
WAGE	0	0
TOTAL	93	92

OFFICE OF COMMUNITY & MEDIA RELATIONS

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	0	0
OTHER GS/GM	7	7
WAGE	0	0
TOTAL	8	8

INTERDISCIPLINARY TECH. OFFICE

	'93	'94
SES	1	1
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	3	3
OTHER GS/GM	2	2
WAGE	0	0
TOTAL	6	6

SOLAR DYNAMIC POWER MODULE DIVISION

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	0	0
GS/GM 14	0	0
OTHER GS/GM	0	0
WAGE	0	0
TOTAL	0	0

NUCLEAR PROPULSION OFFICE

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	3	3
OTHER GS/GM	7	7
WAGE	0	0
TOTAL	11	11

ENVIRONMENTAL PROGRAMS

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	4	4
OTHER GS/GM	16	16
WAGE	0	0
TOTAL	21	21

OFFICE OF INTERAGENCY & INDUSTRY PROGRAMS

	'93	'94
SES	0	0
GS/GM 16	0	0
GS/GM 15	1	1
GS/GM 14	1	1
OTHER GS/GM	7	7
WAGE	0	0
TOTAL	9	9

* Currently under review.

93-1072

NASA
Headquarters/
Space Station
Program Office

RESEARCH AND PROGRAM MANAGEMENT

FISCAL YEAR 1994 ESTIMATES

NASA HEADQUARTERS

CENTER ROLES AND MISSIONS

The mission of Headquarters is to plan and provide executive direction for the implementation of U.S. space and aeronautics programs consistent with the objectives stated in the National Aeronautics and Space Act of 1958, as amended. Responsibilities include providing a balanced Agency workforce capable of planning, formulating, and advocating executive direction to national programs to implement the above objectives. The following offices at Headquarters assist in carrying out the technical aspects of the mission:

Office of Space Flight - Plans, directs, executes, and evaluates the acquisition and operations of space flight programs including the Space Shuttle and other space flight related programs. The Space Shuttle is a key element of the National Space Transportation System. The Office of Space Flight develops and implements policy for all system users who interface with the Shuttle; promotes improvements in safety, reliability, and effectiveness of Shuttle operational performance; and manages a variety of programs such as Spacelab, Payload Operations and Support Equipment, the Engineering Technical Base at the OSF centers, and Space Station operations planning.

Office of Space Systems Development - Plans, directs, executes, and evaluates the research and development of space systems, as well as the design, development, test, evaluation, and overall management of the Space Station program. Other functions include the Advanced Programs which conduct definition studies to support future new development programs, systems improvements, and expanded capabilities for space transportation systems.

Space Station Program Office - The Space Station Program Office's primary functions consist of day-to-day program management, development, and implementation.

Office of Space Science (OSS) - Responsible for research and development efforts utilizing a variety of flight system and ground based observatories to increase knowledge of the universe. OSS research and development activities are carried out through the following program areas: Planetary Exploration, Astrophysics, and Space Physics. The Planetary Exploration program encompasses the scientific exploration of

the solar system including the planets and their satellites, comets and asteroids, and the interplanetary medium. The Astrophysics program studies the distant galaxies and the interstellar medium in our galaxy. The Space Physics program studies our own sun providing answers to questions requiring comprehensive research into solar-terrestrial processes and the physics and coupling between the solar wind, magnetosphere, ionosphere, and atmosphere. Responsibilities also include the procurement of Expendable Launch Vehicle Services for NASA and other civil government programs.

Office of Mission to Planet Earth (OMTPE) - Responsible for research and development efforts utilizing a variety of flight system and ground based observatories to increase knowledge of the processes in the atmosphere, oceans, land surface and interior of the Earth, and to advance our knowledge of the interactions between these environments. The Mission to Planet Earth program provides space observations of parameters involved in these processes and extends the national capability to predict environmental phenomena, both short and long-term, and their interactions with human activities. The Mission to Planet Earth program also supports a broad interdisciplinary basic research program.

Office of Life and Microgravity Sciences and Applications (OLMSA) - Responsible for research and development efforts utilizing a variety of flight system and ground based observatories to increase knowledge in Life and Microgravity Sciences. The Life Sciences research program results are applied to maintaining astronaut health and productivity; understanding the response of biological mechanisms to weightlessness; study of basic cellular, development and physiological processes; development of environmental health requirements and support systems for long-term piloted space flight. The Microgravity Research program is aimed at utilizing the low gravity environment to obtain new knowledge and understanding of those physical phenomena made obscure by the effects of gravity and to increase understanding of those physical phenomena made obscure by the effects of gravity and to increase understanding of gravity-dependent phenomena. Responsibilities also include the Shuttle/Spacelab and attached payload mission management activities.

Office of Aeronautics - Plans, directs, executes, and evaluates the aeronautical and transatmospheric research and technology programs. The goal of the aeronautical programs is to conduct research and develop technology to strengthen U.S. leadership in civil and military aviation. The program is based on a strong commitment to develop a broad technology base in support of the aviation industry, to enhance safety and capacity of the national airspace system, and to assure U.S. aviation superiority for national security. The Transatmospheric Research and Technology program is a portion of the joint NASA/Department of Defense National Aerospace Plane (NASP) program. The NASP program objective is to develop and then demonstrate in an experimental flight vehicle the technology required to permit the nation to develop reusable, single-stage-to-

orbit vehicles with airbreathing primary propulsion, and horizontal takeoff and landing capability.

Office of Advanced Concepts and Technology (OACT) - The Office of Commercial Programs and the Space Technology Directorate of the former Office of Aeronautics and Space Technology were merged to create the Office of Advanced Concepts and Technology. OACT will be the NASA focal point for technology innovation and transfer. The new office will support the development and application of technologies critical to the economic, scientific, and technological competitiveness of the U. S. and will promote U. S. industrial preeminence through strengthened linkages between the private sector and NASA technology efforts. OACT activities pursue the transfer of technology from NASA to the private sector, enhanced partnerships between the private sector and NASA, and development of critical technologies essential to the accomplishment of future missions.

Office of Space Communications - Provides the vital tracking, telemetry, command, data acquisition, communications, and data processing required by all NASA flight projects. Included in Earth orbital activities are the Space Transportation System (STS), Spacelab, and scientific and applications missions. The various capabilities provided include: (a) tracking to determine the position and trajectory of vehicles in space; (b) acquisition of science and space applications data from on-board experiments and sensors; (c) acquisition of engineering data on the performance of spacecraft and launch vehicle systems; (d) reception of television transmissions from space vehicles; (e) transmissions of commands from ground facilities to the spacecraft; (f) voice communications with astronauts; (g) transfer of information between the various ground facilities and control centers; and (h) processing of data acquired form the launch vehicles and spacecraft. These capabilities are essential for operating and maintaining U.S. space assets to achieve the scientific objectives of all flight missions and for executing the critical decisions necessary to the success of these missions.

Office of Safetv and Mission Quality (OSMQ) - Assures NASA mission safety through the development, implementation, and oversight of uniform safety, reliability, maintainability, technical standards, improving program assurance, and quality assurance (SRM&QA) policies and procedures. OSMQ conducts independent technical assessments of all major flight and nonflight projects to determine compliance to SRM&QA requirements.

CENTER MANAGEMENT AND OPERATIONS - This category is composed of two major groups of Headquarters employees. The first group includes all the functional and staff offices which provide Agency-wide guidance and oversight in areas such as, procurement, personnel, financial management, supply and logistics, equal opportunity, international relations, management systems and facilities.

This second major group includes the employees whose primary task is to provide direct support to the Headquarters staff by providing day-to-day operations in procurement, personnel, financial, and other administrative functions.

DISTRIBUTION OF FLU – TIME EQUIVALENT **(FTE) WORKYEARS** BY **PROGRAM**

HEADQUARTERS	**FY** 1992 ACTUAL	**FY 1993** BUDGET ESTIMATE	**FY 1993** CURRENT ESTIMATE	**FY 1994** BUDGET ESTIMATE
SPACE STATION AND **NEW** TECHNOLOGY INVESTMENTS	275	285	270	270 •
SPACE FLIGHT PROGRAMS	198	208	197	197
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	40	41	40	40
SPACE SHUTTLE PRODUCTION AND OPERATIONS	158	167	157	157
LAUNCH SERVICES	7	*0*	6	6
SPACE SCIENCE	103	97	110	125
PHYSICS *AND* ASTRONOMY	69	64	76	76
PLANETARY EXPLORATION	34	33	34	49
LIFE SCIENCES/	28	27	34	*'0*
LIFE AND MICROGRAVITY SCIENCES	0	0	0	34
SPACE APPLICATIONS/	99	125	100	0
MISSION TO PLANET EARTH	0	0	0	100
ADVANCED CONCEPTS AND TECHNOLOGY	107	112	105	105
SPACE RESEARCH AND TECHNOLOGY	61	66	61	61
COMMERCIAL **PROGRAMS**	46	46	44	44
AERONAUTICAL RESEARCH AND TECHNOLOGY	67	69	67	67
TRANSATMOSPHERIC RESEARCH AND TECHNOLOGY	6	8	6	6
SPACE EXPLORATION	16	15	15	0
SAFETY RELIABILITY AND QUALITY ASSURANCE	73	90	74	74
ACADEMIC PROGRAMS	26	26	33	33
TRACKING AND DATA PROGRAMS	59	61	57	57
SUBTOTAL DIRECT	1,064	1,123	1,074	1,074
CENTER MANAGEMENT AND OPERATIONS	868	883	860	850
SUBTOTAL (FULL–TIME PERMANENT)	1,932	2,006	1,934	1,924
OTHER CONTROLLED **FTES**	97	85	68	66
TOTAL, FULL–TIME EQUIVALENTS	2,029	2,091	2,002	1,990
CORE	0	107	0	0
TOTAL, PROGRAM **PLAN**	2,029	2,198	2.002	1,990

"UNDER REVIEW

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
I.	PERSONNEL AND RELATED COSTS	163,368	174,500	160.784	167.319
	A. COMPENSATION AND BENEFITS	148,354	158,125	154,711	156,588
	1. COMPENSATION	128,111	134,069	131,328	132,769
	2. BENEFITS	20,243	24,056	23,383	23,819
	B. SUPPORTING COSTS	15,014	16,375	6,073	10,731
	1. TRANSFER OF PERSONNEL	2,196	1,573	1,021	1,387
	2. INVESTIGATIVE SERVICES	3,406	8,756	988	1,296
	3. PERSONNEL TRAINING	9,412	6,046	4,064	8,048
II.	TRAVEL	11,133	12,603	10,686	11,686
	A. PROGRAM TRAVEL	4,877	6,376	4,858	5,441
	B. SCIENTIFIC AND TECHNICAL DEVELOPMENT TRAVEL	1,158	1,050	1,151	1,297
	C. MANAGEMENT AND OPERATIONS TRAVEL	5,098	5,177	4,677	4,948
	TOTAL, FUND REQUIREMENTS	174.501	187.103	171.470	179.005

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
	Explanation of Fund Requirements				
I.	**PERSONNEL AND RELATED COSTS**	**163,368**	**174,500**	**160.784**	**167.319**
	A. Compensation and Benefits	**148,354**	**158,125**	**154,711**	**156,588**
	1. Compensation	128,111	134,069	131,328	132,769

The change in compensation from the 1993 Budget Estimate to the 1993 Current Estimate reflects Congressional reductions, the transferring of functions/positions to the other NASA centers and the impact of Executive Order reductions. The 1994 Budget Estimate includes full year funding of the 1993 pay raise, normal salary growth due to promotions, within grades, merit pay, and the impact of the "Executive Order 12839" FTE reduction.

	2. Benefits	20,243	24,056	23,383	23,819

The changes from the 1993 Budget Estimate to the 1993 Current Estimate reflects a decrease in the number of FTE funded at Headquarters and revised rate estimates. The 1994 Budget Estimate includes full year funding of the 1993 pay raise, increases in retirement benefits, and health insurance.

	B. Supporting Costs	**15,014**	**16,375**	**6,073**	**10,731**
	1. Transfer of Personnel	2,196	1,573	1,021	1,387

These are the costs associated with transfer of government personnel from other duty stations to NASA Headquarters. The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to a reduction in the number of hires using relocation services. The 1994 Budget Estimate includes funding for additional hires to use these benefits.

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
	(Thousands of Dollars)			
2. Investigative Services	3,406	8,756	988	1,296

On behalf of the entire Agency, Headquarters reimburses the Federal Bureau of Investigation (FBI), Defense Investigative Services (DIS), Immigration and Naturalization (INS), and Credit Bureau Investigations (CBI) for background checks of new hires and re-investigations of current employees and the costs related to the processing of Equal Employment Opportunity complaint investigations. The cost of investigations is a function of two variables: the number of investigations to be conducted, and the unit charge made by the investigative agencies. The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to the cancellation of Core conversions and the decentralization of the agency's OPM investigative costs to each of the centers. The 1994 Budget Estimate includes increases to these services from the agencies performing the investigations.

3. Personnel Training	9,412	6,046	4,064	8,048

The purpose of the Headquarters training program is to continue to develop the skills and knowledge of civil service employees in order to efficiently support center roles and missions. Headquarters responsibilities includes: management, oversight and guidance of agencywide programs; and activities designated and developed specifically for Headquarters personnel. Training costs include tuition, fees and related costs for training at colleges, universities, technical institutions, and for the cost of seminars and workshops. The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is based on budget constraints. The 1994 Budget Estimate provides for some agencywide Total Quality Management training programs and return to a normal level of training in Headquarters and other agencywide programs.

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
Explanation of Fund Requirements					
II.	**TRAVEL**	**11.133**	**12.603**	**10.686**	**11.686**
	A. Program Travel	4,877	6,376	4,858	5,441

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is reflective of budget reductions. The increase from the 1993 Current Estimate to the 1994 Budget Estimate reflects increased program requirements and inflationary growth.

	B. Scientific and Technical Development Travel	1,158	1,050	1,151	1,297

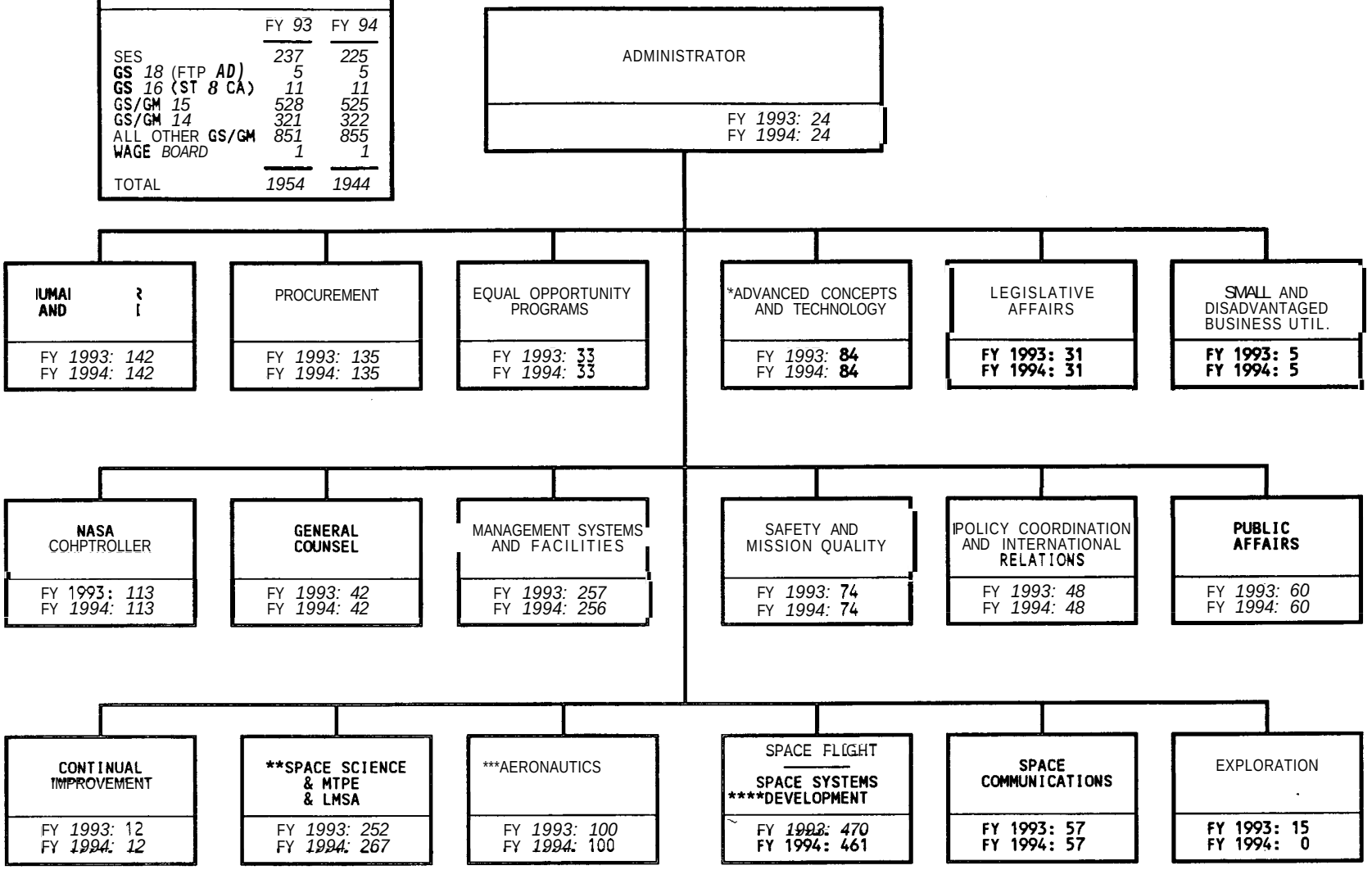
The increase between the 1993 Budget Estimate and the 1993 Current Estimate reflects maintenance of the 1992 level of support to this activity. The increase from the 1993 Current Estimate to the 1994 Budget Estimate is due to increased participation in research symposia; and provides opportunities to keep the highly technical workforce abreast of "state-of-the-art" technical issues and advancements in the aerospace; scientific; and research and development communities.

	C. Management and Operations Travel	5,098	5,177	4,677	4,948

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate reflects efforts to transfer the funding for the fare subsidy program to benefits. The increase from the 1993 Current Estimate to the 1994 Budget Estimate is primarily inflation, and provides for continued management oversight reviews.

ORGANIZATION AND STAFFING
NASA HEADQUARTERS

HEADQUARTERS STAFFING SUMMARY	FY 93	FY 94
SES	237	225
GS 18 (FTP AD)	5	5
GS 16 (ST & CA)	11	11
GS/GM 15	528	525
GS/GM 14	321	322
ALL OTHER GS/GM	851	855
WAGE BOARD	1	1
TOTAL	1954	1944



NOTE: * FORMER OFFICE OF COMMERCIAL PROGRAMS REORGANIZED INTO ADVANCED CONCEPTS & TECHNOLOGY.
** FORMER OFFICE OF SPACE SCIENCE & APPLICATIONS REORGANIZED INTO THREE OFFICES; SPACE SCIENCE, MISSION TO PLANET EARTH AND LIFE & MICROGRAVITY SCIENCE AND APPLICATIONS.
*** FORMER OFFICE OF AERONAUTICS & SPACE TECHNOLOGY REORGANIZED NTO AERONAUTICS.
**** OFFICE OF SPACE SYSTEMS DEVELOPMENT CURRENTLY UNDER REVIEW.
NOTE: DATA REPRESENTS ESTIMATED PAID ON-BOARD EMPLOYEES AT END OF FISCAL YEAR.

FMM/03/19/93

Inspector
General

INSPECTOR GENERAL

FISCAL YEAR 1994 ESTIMATES

OFFICE OF INSPECTOR GENERAL

BASIS FOR FY 1994 ESTIMATE

The NASA Office of Inspector General (OIG) will continue to effectively perform its mission with 210 Full Time Equivalents (FTEs). At this staffing level, the OIG audit and investigative programs are especially challenged to become more effective and productive. Within this staffing level. the OIG will continue to provide assistance to NASA management and perform its required audit of NASA's financial systems used to prepare financial statements required by the Chief Financial Officers (CFO) Act. This staffing estimate recognizes the budget constraints facing the Agency and the need to do more with less.

As NASA sets new priorities for its programs and operations within current budget constraints. the OIG will be forced to do likewise. The OIG will continue to selectively concentrate staff resources on those programs and operations identified as the most critical and vulnerable to fraud and abuse based on funding levels, program needs. Congressional/Administration concerns and results of OIG research and findings.

Audits will continue to evaluate NASA's financial management practices, systems, controls, and statements to fulfill CFO audit requirements, as well as programmatic and operational vulnerabilities. The OIG investigations program will remain focused on complex white collar criminal cases - fraud against the Government by contractor and government employees, product substitution, false claims, false statements, wire fraud, and conspiracy - which normally demand staff commitments for extended periods. Historically, these criminal cases have represented approximately ***85*** percent of the total caseload. In addition. the noncriminal caseload includes procurement irregularities. unethical and improper conduct, prohibited personnel practices, and waste and mismanagement.

OBJECTIVES AND STATUS

The OIG audit workload is defined within a structured internal audit universe encompassing NASA's programs and operations and an external universe comprised of NASA's prime contractors. their subcontractors. and grantees. and legislation requiring OIG audit of NASA's financial systems, controls and reports. Ideally each universe should provide audit coverage on a five year cycle. At the **FY 1993** audit staffing level, the OIG is operating on an inadequate **16.3** year internal audit cycle. The OIG audit program sets priorities for internal and external audits to maximize the return on available audit resources. These priorities are established and contained in various long range audit plans used to develop the required annual audit plan. This overwhelming audit workload requires continuous adjustment of priorities to provide balanced coverage

of programs and operations most vulnerable to abuse and mismanagement. Further. program/project change, growth. delay and termination increases the need for OIG oversight of contractor/sub-contractor/grantee cost, schedule and performance effectiveness. NASA's continued reliance on contractors and grantees (about **90** percent of the Agency's total obligations are for procurement) requires direct OIG audit work and oversight of Defense Contract Audit Agency (DCAA) audit results to ensure effective contract execution and administration. NASA was billed approximately **$17** million during FY **1992** for contract audit services.

The OIG will continue to monitor and assess NASA's high risk areas. material weaknesses and areas of significant concern to ensure that corrective actions are implemented timely. Areas of emphasis will include: institutional support contracting: procurement and contract/subcontract management: information resource management: computer security: product integrity and quality: safety: financial management systems, controls and reports: environmental management: critical sources of supply for programs and missions, facilities infrastructure: and programs/projects being delayed, restructured or terminated because of funding and budget constraints.

Vulnerabilities are determined by taking into consideration the following: whether program/project objectives are accomplished in the most cost-effective manner: if NASA's more than **$1** billion annual expenditure on information technology is providing expected programmatic and financial information needed to make sound decisions (NASA is the top ranked civilian agency in information technology spending): management's actions to correct internal control weaknesses reported under the Federal Manager's Financial Integrity Act: improvements in financial management systems, practices, controls and information: effectiveness of the audit follow-up system in enabling management to maintain the status of corrective actions: completeness of safety and mission quality activities: and the adequacy of agencywide corrective actions addressing environmental concerns.

The OIG investigative workload of both criminal and noncriminal cases continues to exceed the availability of investigative resources. Growth in the investigative program has caused OIG primarily to be reactive with emphasis given to the more serious criminal allegations. The FY **1993** investigative staffing level does not allow flexibility to effectively respond to an increasingly complex workload. With the number of complex fraud cases continuing to increase. such cases take longer to resolve, further reducing our flexibility to improve and expand the program. Also, the increasing quantity of investigative allegations received requires a preliminary evaluation to determine their potential impact and, if serious. opening an investigation: further adversely affecting the timely completion of on-going cases.

In summary. the OIG will strive to improve the scope, timeliness and thoroughness of it's oversight of NASA programs and operations. identify preventive measures. and enhance its capability to assist NASA management to efficiently and effectively achieve program goals.

FISCAL YEAR 1994 CONGRESSIONAL BUDGET

DISTRIBUTION OF PERMANENT WORKYEARS BY PROGRAM

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
	(Thousands of Dollars)			
Full-time permanents.....	196	206	204	200
Other controlled FTE's.....	10	10	10	10
Total (full-time equivalents)....	206	216	214	210

SUMMARY OF RESOURCES REQUIREMENTS

FUNDING PLAN BY FUNCTION

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)			
I.	Personnel & related costs.....	12.375	14,366	13,927	14.067
II.	Travel.....	698	756	725	780
III.	Operation of installation.....	804	778	410	653
	A. Facilities services.....	(--)	(--)	(--)	(--)
	B. Technical services.....	(638)	(513)	(305)	(500)
	C. Management & operations.....	(166)	(265)	(105)	(153)
	Total, fund requirements...	13,877	15,900	15,062	15.500

RESOURCES REQUIREMENTS BY FUNCTION

		1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
			(Thousands of Dollars)		
I.	PERSONNEL & RELATED COSTS.....	12.375	14.366	13,927	14,067
	Summary of Fund Reauirements				
	A. Compensation & benefits				
	1. Compensation				
	a. Full-time permanent.....	8,748	10.600	10,450	10.502
	b. Other than full-time permanent	324	220	330	350
	c. Overtime & other compensation	281	215	225	245
	Subtotal.....	9.353	11.035	11.005	11.097
	2. Benefits.....	1,702	1,788	2.092	2,230
	Subtotal. compensation & Benefits.....	11.055	12,823	13.097	13,327
	B. Supporting costs				
	1. Transfer of personnel.....	1,200	1,348	690	600
	2. Personnel training.....	120	175	130	130
	3. OPM services.....	--	20	10	10
	Subtotal, support costs.	1,320	1,543	830	740
	Total, personnel & related costs.....	12,375	14,366	13,927	14.067

EXPLANATION OF FUND REQUIREMENTS

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)		
A. Compensation and benefits.....	11.055	12,823	13.097	13,327
1. Compensation.....	9.353	11.035	11.005	11,097
a. Full-time permanent.....	8.748	10,600	10,450	10.502

Basis of Cost for Permanent Positions

In **1994** the cost of permanent workyears will be **$10.502.000.** The increase from **1993** results from the following:

Cost of full-time permanent workyears in **1993**		10,450
Cost changes in **1994**		52
Within-grade and career advances	+52	
Cost of full-time permanent workyears in **1994**		10.502

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
b. Other than full-time permanent				
1. cost.....	324	220	330	350
2. Workyears.....	10	10	10	10
c. Overtime & other compensation	281	215	225	245

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)		
2. Benefits	1,702	1.788	2,092	2.230
Contributions by category:				
Retirement fund & thrift plan	1.003	1,035	1,163	1.229
Employee life insurance	18	18	24	27
Employee health insurance	374	450	470	505
Workmen's compensation	--	22	20	24
FICA	172	137	250	265
Medicare	135	126	165	180
Total	1,702	1,788	2,092	2,230
B. Supporting costs	1,320	1.543	830	740
1. Transfer of personnel	1.200	1.348	690	600

The costs associated with transfer of personnel include movement of household goods. subsistence and temporary expenses. and real estate and miscellaneous moving expenses related to change of duty station.

2. Personnel training	120	175	130	130

The maintenance and expansion of skills through various training and educational activities is essential in carrying out the Inspector General's mission. Part of the training consists of courses offered by other Government agencies. usually for a fee. The remainder of the training is provided through non-government sources. The costs are for tuition. fees. and related costs for training at colleges, universities and technical institutions. and also to cover the costs associated with seminars and workshops. The 1994 training funds are needed not only for routine training. but also to fund training requirements mandated by the GAO audit standards and training for Financial Management Audits.

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)		
3. OPM services (Headquarters only)	--	20	10	10

The costs associated with the Office of Personnel Management's (OPM) investigation of new hires for the Office of Inspector General are included here. In FY **1992.** NASA OIG conducted investigations of new hires due to a backlog at OPM. however OPM will conduct a large percentage of these investigations in FY **1993** and FY **1994.**

11. TRAVEL.....	**698**	**756**	**725**	**780**

Summary of Fund Reauirements

Travel funding is required to carry out audit, investigation and management duties. The increase from the current estimate in **1993** to the **1994** budget estimate is due to increased per-diem. increased airline costs. and increased workload.

III. OPERATION OF INSTALLATION.....	**804**	**778**	**410**	**653**
A. Technical services.....	**638**	**513**	**305**	**500**
B. Management and operations.....	**166**	**265**	**105**	**153**

Explanation of Fund Reauirements

Operation of Installation provides a broad range of services and equipment in support of the Inspector General's activities.

A. Technical services.....	**638**	**513**	**305**	**500**

This estimate provides for all equipment, including the lease, purchase, maintenance, programming and operations services of automated data processing (ADP) equipment. NASA provides common services items such as office space, communications, supplies, and printing and reproduction at no charge to the Office of Inspector General. The funding for Technical Services will cover the cost of providing an EDP (electronic data processing) upgrade, equipment to employees, and replacing equipment that has become outdated or unserviceable. Also, as funding permits, minicomputers are being placed at OIG locations which presently are not part of the existing EDP system.

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)		
B. Management and operations.....	166	265	105	153
Summary of Fund Reauirements				
1. Administrative communications	--	--	..	--
2. Printing and reproductions.	--	--	--	--
3. Installation common services	166	265	105	153
Explanation of Fund Reauirements				
3. Installation common services	166	265	105	153

Included in this category are miscellaneous expenses within the Office of Inspector General. i.e., GSA cars, the Inspector General's confidential fund, miscellaneous contracts, supplies not provided by NASA, etc. The increase in Installation Common Services will primarily allow €or audit and investigative contractor support and other specialized activities which the OIG cannot perform internally.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

OFFICE OF INSPECTOR GENERAL

WORKLOAD

	1992 Actual	1993 Estimate	1994 Estimate
Office staff ceiling	206	214	210
Full-time permanents	196	204	200
Investigations			
Cases pending beginning of year	381	330	378
Opened during year	349	408	424
Closed during year	400	360	374
Cases pending end of year	330	378	428
Audits			
Audits pending beginning of year	74	73	76
Opened during year	73	80	80
Closed during year	74	77	79
Audits pending end of year	73	76	77

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

PROPOSED APPROPRIATION LANGUAGE

OFFICE OF INSPECTOR GENERAL

For necessary expenses of the Office of the Inspector General in carrying out the provisions of the Inspector General Act of 1978, as amended, [$15,062,000] *$15,500,000. (Departments of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, 1993.)*

Special
Analyses

RESEARCH AND **PROGRAM MANAGEMENT**

FISCAL YEAR **1994 ESTIMATES**

JET PROPULSION LABORATORY

DESCRIPTION

The Jet Propulsion Laboratory (JPL) is located in Pasadena. California. approximately 30 Kilometers north of downtown Los Angeles with subsidiary facilities located at Goldstone. California (tracking and data acquisition). Edwards Air Force Base, California (hazardous testing). Table Mountain, California (atmospheric remote sensing, solar studies and astronomy). Kennedy Space Center (KSC), Florida (support of JPL launches at KSC), Vienna, Virginia (support to the Technology and Applications Programs Office). and Washington. DC (support to the Visiting Senior Scientist and JPL Detailee Programs).

At Pasadena, the Laboratory occupies 177 acres of land of which 156 acres. at the Oak Grove site are owned by NASA and 21 acres are leased. Approximately 85 percent of the employees are located at the Oak Grove site. At Goldstone, facilities are located on land occupied under permit from the Army. At Edwards Air Force Base, facilities are located on land occupied under permit from the Air Force. The facilities at Table Mountain are located on land occupied under permit from the Forest Service of the Department of Agriculture. The Eastern Launch Site Office is located at Kennedy Space Center; the other east coast offices are leased. The capital investment of the Jet Propulsion Laboratory, including the Deep Space Network (DSN), fixed assets in progress, and contractor held facilities, as of September 30. 1992. was $977,923,023.

The JPL is a Government-owned installation that is staffed and managed by the California Institute of Technology. Contract NAS7-918 between NASA and Caltech governs research. development, and related activities at the laboratory with facilities being provided under a separate facilities contract NAS7-**920(F).** The cost of operating JPL for NASA activities is borne by the Research and Development (R&D) and the Space Flight. Control, and Data Communications (SFCDC) appropriations. Accordingly, the Research and Program Management (R&PM) costs presented in this special analysis for JPL are for purposes of comparison only and are not a part of the NASA R&PM budget.

ROLES AND MISSIONS

The JPL is responsible for the conduct of NASA missions concerned with scientific exploration of the solar system and deep space: for spacecraft tracking and data acquisition: for research and analysis: and for the development of advanced spacecraft technologies including propulsion. power. structures. guidance and control systems. thermal control. electronics, and others. The Laboratory is also assigned responsibility for selected Earth-orbital projects and for the development and application of earth remote sensing technology and instruments. Implicit in these assignments is a broad range of engineering. scientific, and management functions devoted to:

1. The conduct of complete spaceflight projects, including overall project management and all phases of project activity beginning with mission design and following with spacecraft design. development. testing. flight operations. and data analysis.

2. The development and operation of the Deep Space Network (DSN) which provides tracking and data acquisition services for all NASA projects involving missions beyond near-earth orbits.

3. Continuing programs of scientific investigation. research and analysis. instrument and technology development.

In more specific terms. the principal Laboratory activities in support of NASA can be categorized as follows:

Solar System Exploration - Since the beginning of the Nation's space activities. JPL has devoted a major part of its efforts to exploration of the planets. their satellites. and the interplanetary medium. The Laboratory has had project responsibility for all of the Mariner missions. including design. fabrication. assembly and testing of the spacecraft. During almost three decades. beginning with the Mariner 2 flight to Venus in 1962. these missions produced enormous scientific returns.

In the continuing series of planetary missions. JPL has project responsibility for the Voyager mission. The two Voyager spacecraft were launched in 1977 and made close flybys of Jupiter and its major satellites in 1979. In 1980 and 1981. the Voyager spacecraft encountered Saturn. Each of these four Voyager planetary encounters resulted in major scientific discoveries and obtained unique data. Both spacecraft remained in good operating condition following the Saturn encounters, and in consequence the Voyager mission was considerably extended beyond its original objectives. Voyager 2 was targeted to a flyby of Uranus, which occurred in January 1986. with highly satisfactory scientific results. and has completed its "grand tour" of the solar system with a flyby of Neptune in August 1989. Voyagers 1 and 2 continue to collect and transmit data on the space environment beyond the solar system.

The Laboratory also has project responsibility for the Galileo mission, which will orbit Jupiter and release an instrumented probe to make in-situ measurements of the physical and chemical properties of the Jovian atmosphere. During its **22** month prime mission, the orbiter will observe Jupiter and its system of satellites at close range. JPL is the management center for the Galileo project and developed the orbiter ih-house. The Ames Research Center was responsible for the probe development. Galileo was launched successfully in October **1989.** flew by Venus in February **1990,** by Earth for the first time in December **1990.** and encountered the asteroid Gaspra in October **1991.** The spacecraft flew by the Earth again in December **1992** on its final journey to the outer solar system, and will arrive at Jupiter in December **1995.**

The Magellan mission has obtained high resolution global radar imagery and altimetric coverage of **99%** of Venus. Gravity data continues to be acquired from the spacecraft until termination in May **1993.** The objectives are to address fundamental questions regarding the origin and evolution of the planet. Magellan was launched successfully in May **1989.** and inserted into orbit in August **1990.** The primary data gathering period lasted over one Venusian year equal to **243** earth days. Magellan is now completing its extended mission phase. JPL manages the project. including responsibility for mission design and operations. Industry developed the spacecraft and synthetic aperture radar under contracts to JPL.

The Ulysses Project is a cooperative effort between NASA and the European Space Agency (ESA) to study the Sun at high solar latitudes. The JPL managed the development of United States instruments on the ESA spacecraft, plus the corresponding data analysis. In addition. JPL is providing mission support to ESA. ESA developed the spacecraft and a set of its **own** instruments. Ulysses was launched by the Shuttle in October 1990. arrived at Jupiter in February **1992** for a gravity assist. where it acquired new data on the space environment around Jupiter. The spacecraft is now turned back towards the inner solar system for a south polar pass around the Sun in September **1994.**

The Mars Observer mission will undertake planet-wide studies of the composition and physical state of Martian materials. examine the major surface forming processes and their time scales, and explore the structure and circulation aspects of the atmosphere. The JPL is the management center with responsibility for the scientific payload. and contracted with industry for development of the spacecraft bus. Mars Observer was launched by a Titan III expendable launch vehicle in September **1992.** and will arrive at Mars in August **1993.**

JPL also has project responsibility for the Cassini mission which will undertake investigations of the planet Saturn. The scientific goals are to determine cloud properties and atmospheric composition, determine atmospheric wind velocities and temperatures. and study the internal structure and rotation of the planet. The Cassini spacecraft payload includes radar. visible infrared mapping spectrometer, imaging, and an ESA (Huygens) probe that will investigate one of Saturn's moons. Titan. The launch date is planned for October **1997.**

Life and Micronravitv Sciences and Applications - In the area of Life and Microgravity Sciences, JPL has some responsibility for fluids and low temperature research experiments. Microgravity experiments developed for Shuttle flights include the Drop Physics Module and the Lambda Point Experiment. both of which flew in **1992.**

Astrophysics - Consistent with its role as a center for Earth-orbital spacecraft development. JPL managed the Infrared Astronomical Satellite (IRAS) project which was launched in January **1983.** IRAS has been a highly successful scientific undertaking, producing a database comprised of photometric observations of asteroids, stars, and galaxies in four wavelength bands from near to far infrared. This unique database is of such size that analysis will continue for many years.

Technology development for a possible infrared-astronomy mission is being carried out. The associated detector arrays would permit a thousand-fold gain in sensitivity for astrophysical observations.

The Wide Field/Planetary Camera I (WF/PC I). developed and fabricated at JPL. was orbited successfully as an instrument on the Hubble Space Telescope in April **1990.** JPL's WF/PC II, with optics to correct the spherical aberration of the Hubble. will be delivered in May **1993** and launched in December **1993.**

Mission to Planet Earth - JPL is a principal center for work in oceanographic applications of space technology. Development was initiated in FY **1987** on the Ocean Topography Experiment (Topex/Poseidon), a cooperative effort with the French government to develop an ocean-observing satellite which will map the circulation of the Earth's oceans. The satellite was launched by the French Ariane in August **1992** and mission operations are currently underway. JPL has project management responsibility for the TOPEX/Poseidon, as well as responsibility for mission operations and science data processing.

The Laboratory also conducts significant activities in upper atmospheric and Earth resources research and in development and implementation of remote sensing techniques for Earth observations. Major flight instruments and experiments include the Shuttle borne Atmospheric Trace Molecule Spectrometers, the Upper Atmosphere Research Satellite (UARS) Microwave Limb Sounder and the Active Cavity Radiometer Irradiance Monitor II, (both launched on the UARS in September **1991)** the Shuttle Radar Lab-1 (expected to fly in **1994),** and the NASA Scatterometer on the Japanese ADEOS spacecraft to be launched in **1996.** In addition. a variety of instruments are being studied and developed for the Earth Observation System (EOS). Finally. geodynamics and plate tectonics are two other important areas of earth science research.

Spacecraft Flight Operations - The Jet Propulsion Laboratory is responsible for the design, development, maintenance, and operation of NASA's worldwide Deep Space Network (DSN) and a multi-mission Space Flight Operations Center (SFOC). The DSN tracking stations are located in California. Spain. and Australia. and support projects involving flights beyond near-Earth orbit, including some international missions. The Space Flight Operations Center is located at JPL. and is the facility for actual day-to-day operations of

deep-space missions. JPL also implemented the Network Consolidation Program which co-locates major facilities of the Space Tracking and Data Network (STDN) near-Earth tracking stations with the three DSN stations. These consolidated facilities are managed by JPL and provide an efficient. technically advanced, and cost effective means of operation.

Research and Analvsis - The Jet Propulsion Laboratory maintains an effective program of advanced technical development to provide technologies for present and prospective project assignments and to further the general capabilities of NASA. Areas of involvement include spacecraft advanced technology and development. controls and robotics, space power and propulsion, structures, microelectronics and sensors, information systems. advanced computer concepts. and satellite communications. Ground based research programs are carried out in the planetary sciences, physics and astronomy, and Earth and ocean physics. These activities involve broad collaboration with the scientific and academic communities and with staff members from other NASA field installations.

JET PROPULSION LABORATORY
PY 1994 SIMULATED RESEARCH AND PROGRAM MANAGEMENT (R&PM)
DISTRIBUTION OF PERMANENT WORKYEARS BY PROGRAM

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
Space Station and New Technolonv Investments	25	16	25	25'
Space Flinht Proarams	6	15	6	6
Space Transportation Capability Development.	3	6	3	3
Space Shuttle..	3	9	3	3
Space Science	1.500	1.509	1.475	1,487
Physics and Astronomy	206	188	203	202
Planetary Exploration	1,294	1,321	1,272	1.285
Life Science	19	15	19	
Life and Micronravitv Sciences				67
Space Applications	695	680	683	
Mission to Planet Earth				623
Space Research and Technolonv	194	171	191	191
Commercial Proarams	10	4	10	10
Aeronautics Research and Technology	8	3	8	8
Safetv. Reliabilitv. Maintainabilitv & Quality Assurance	26	28	26	26
Tracking and Data	502	471	494	494
DIRECT SUPPORT	553	672	545	545
CENTER MANAGEMENT AND OPERATIONS	1,624	1.890	1.597	1.599
Total, Permanent Workyears	5,162	5.474	5.079	5.081

* Currently under review

JET PROPULSION LABORATORY 1994
FY 1994 SIMULATED RESEARCH AND PROGRAM MANAGEMENT (R&PM)
FUNDING PLAN BY FUNCTION

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
I. Personnel and Related Costs.....	387,701	407,662	403,968	422,065
II. Travel.....	15,398	15,408	16,104	16,861
Total, Fund Requirements.....	403,099	423,070	420,072	438,926

EXPLANATION OF FUND REQUIREMENTS

I. Personnnel and Related Costs.....	387.701	407.662	403,968	422,065

The decrease from the 1993 Budget Estimate to the 1993 Current Estimate is due to the change in estimated workforce levels, revised salary estimates based on 1992 experience. and related benefit costs. The increase from the 1993 Current Estimate to the 1994 Estimate is due to normal salary increases. associated increases in personnel benefits, and the change in the estimated workforce level.

11. Travel.....	15,398	15.408	16,104	16,861

The increase from the 1993 Budget Estimate to the 1993 Current Estimate is due to a reassessment of travel requirements based on current programmatic activities. The increase from the 1993 Current Estimate to the 1994 Budget Estimate reflects increased Travel Costs levels.

RESEARCH AND DEVELOPMENT

FISCAL YEAR 1994 ESTIMATES

BUDGET SUMMARY

OFFICE OF AERONAUTICS **AIR TRANSPORTATION**

SUMMARY OF RESOURCES REQUIREMENTS

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)		
Research and development	557,487	687,000	716,762	917,200
Research operations support	104,007	110.885	71.077	69,768
Construction of facilities	42.300	50,100	75,100	212,000
Research and program management	282,074	290.220	299,409	315.745
Total	985.868	1.138.205	1.162.348	1.514.713
Number of direct workyears associated with air transportation	3.357	3.326	3.416	3,462

The goal of the NASA program is to conduct aeronautical research and develop technology to strengthen U.S. leadership in civil and military aviation. The program is based on a strong commitment to develop a broad technology base in support of the aviation industry. enhance the safety and capacity of the national airspace system. and assure U.S. superiority for national security. The FY 1994 estimate reflects the need to address critical barriers and strengthen technology development in selected high payoff areas that are vital to our long-term leadership in aviation. NASA's Aeronautics program is focused on six thrusts: (1) develop selected. high-leverage technologies and explore new means to enhance capabilities of U.S. subsonic aircraft and to enhance the safety and productivity of the national aviation system: (2) resolve the critical environmental issues and establish the technology foundation for economical. high-speed air transportation: (3) ready technology options for revolutionary new capabilities in future high-performance fixed· and rotary-wing aircraft: (4) develop critical technologies and new methodologies for hypersonic cruise and air-breathing space launch vehicles: (5) pioneer the development of innovative concepts. and provide the physical understanding and the theoretical, experimental, and computational tools required for the efficient design and operation of advanced aerospace systems: and (6) develop, maintain and operate

critical national facilities for aeronautical research and for support of industry, Department of Defense (DOD) and other NASA programs. In accomplishing these thrusts, the program will maintain NASA laboratory strength, including enhanced experimental and computational capabilities and staff excellence: ensure timely domestic technology transfer: ensure strong university involvement: and ensure strong support for and cooperation with the DOD. Federal Aviation Administration, and industry partners.

The Transatmospheric Research and Technology program is the NASA portion of the National Aero-Space Plane (NASP) program. which is jointly managed and funded by NASA and the DOD. The objective of the NASP program is to develop and then demonstrate the technology required to permit the Nation to develop and to fly a reusable. single-stage-to-orbit vehicles with airbreathing primary propulsion as well as horizontal takeoff and landing.

The Research and Program Management funding in FY **1994** provides for the salaries and travel of direct civil service workyears.

The Construction of Facilities funding in FY **1994** provides for continuation of the multiyear effort to restore and modernize NASA's aeronautical research and development facilities. In addition, **a** significant new initiative is included to expand the National Aeronautics Facilities Upgrade program begun in FY **1993.**

The research operations support (ROS) funding is only that portion of the total ROS funding shown in the Aeronautical Research and Technology program which is associated with aeronautics.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 1994

SUMMARY OF CONSULTING SERVICES ESTIMATES

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)		
Research and Program Management				
Consultants employed by NASA.....	522	650	550	550
Contractual services.....	--	*14,685	--	--
Subtotal.....	522	15.335	550	550
Research and Development				
Contractual services.....	48,147	59.522	49,640	51,178
Svace Flight. Control and Data Communications				
Contractual services.....	2.894	2.093	2,984	3,076
Total. NASA.....	51,563	76,950	53,174	54.804

- The FY 1993 Research and Program Management Budget Estimate for Contractual Services was developed without considering the fact that the Operation of Installation account of that appropriation had recently been transferred from Research and Program Management into the Research and Development and Space Flight, Control and Data Communications appropriations. If this transfer had been properly reflected the FY 1993 Budget Estimate would have been zero.

NASA uses paid consultants and consulting services contracts to provide advice and expert input in addition to or beyond that available from its in-house civil service workforce. Management controls are established which assure that before entering into either a consultant services arrangement with an individual or consulting services contract, there is ample justification presented and the action is approved at top management levels. The use to which these activities will be put is as follows:

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)		
Research and Pronram Mananement				
Consultants employed by NASA.....	522	650	550	550

NASA hires experts and consultants to provide expert advice and input on the selection of experiments for future space missions. The use of contract employees, in addition to NASA civil service personnel, provides the Agency with an independent view that assures the selection of experiments likely to have the greatest scientific merit. Other individuals are employed to provide independent looks at technical and functional problems in order to give top management the widest range of views before making major decisions.

Contractual services.....	--	14,685	--	--

NASA contracts with consulting services firms for studies of management policies and programs in such areas as ADP. life sciences, microgravity. space physics, utility consumption, safety, reliability and quality assurance, and strategic planning.

Research and Development				
Contractual services.....	48.147	59.522	49,640	51,178

In consonance with its legislative charter. NASA seeks advice from many sources in the private sector on what would be the most productive future programs. The purpose for seeking such advice is to assure the widest review of programmatic thrust is available. Funds are required to provide external expertise and input into organizational decisions. and evaluation of program effectiveness. In 1994. the funds will be used to support analyses conducted by the National Academy of Sciences, and others in support of most research and development programs.

	1992 Actual	1993 Budget Estimate	1993 Current Estimate	1994 Budget Estimate
		(Thousands of Dollars)		
Space Flinht. Control and Data Communications				
Contractual services.....	2.894	2,093	2,984	3.076

NASA hires experts and consultants to provide advice on space flight-operations, mission planning, operations research. feasibility studies, computer program support. and safety. reliability and quality assurance.

DETAIL OF PERMAMENT POSITIONS

NASA TOTAL	FY 1992	FY 1993	FY 1994
Executive level II	1	1	1
Executive level III	0	0	0
Executive level V	0	0	0
	1	1	1
ES–6	50	50	50
ES–5	129	129	129
ES–4	299	291	283
ES–3	27	27	27
ES–2	24	32	40
ES–1	34	34	34
	563	563	563
CA	2	2	2
SL/ST	44	44	44
GS/GM –15	2,540	2,655	2,730
GS/GM –14	3,914	3,990	4,028
GS/GM –13	5,765	5,805	5,828
GS–12	3,636	3,672	3,695
GS–11	2,318	2,204	2,143
GS–10	332	362	377
GS–09	965	891	854
GS–08	355	385	400
GS–07	927	813	752
GS–06	745	819	856
GS–05	986	887	820
GS–04	168	168	168
GS–03	13	13	13
GS–02	8	8	8
	22,718	22,718	22.718
SPECIAL UNGRADED POSITIONS ESTABLISHED BY NASA ADMINISTRATOR	15	15	15
UNGRADED POSITIONS	711	711	711
TOTAL PERMAMENT POSITIONS	24,008	24,008	24,008
UNFILLED POSITIONS, EOY	0	0	0
TOTAL PERM EMPLOYMENT, EOY	24,008	24,008	24,008

PERSONNEL SUMMARY

	FY 1992	FY 1993	FY 1994
AVERAGE GS/GM GRADE	11.8	11.9	11.9
AVERAGE ES SALARY	$104,185	$109,131	$110,768
AVERAGE GS/GM SALARY	$49,768	$52,383	$53,169
AVERAGE SALARY OF SPECIAL UNGRADED POSITIONS ESTABLISHED BY NASA ADMINISTRATOR	$97,660	$102,793	$104,335
AVERAGE SALARY OF UNGRADED POSITIONS	$44,998	$47,363	$48,073

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ESTIMATED FY *1994* EQUIPMENT OBLIGATIONS TO BE PLACED
AT NASA INSTALLATIONS

	(MILLIONS OF DOLLARS)
RESEARCH AND DEVELOPMENT	*334.3*
Space Station	*138.4'*
Space Transportation Capability Development	22.6
Physics and Astronomy	*3.0*
Planetary Exploration	*17.6*
Mission to Planet Earth	*48.7*
Space Research and Technology	*9.9*
Aeronautical Research and Technology	*94.1*
SPACE FLIGHT. CONTROL AND DATA COMMUNICATIONS	*166.9*
Shuttle Production and Operational Capability	*83.9*
Shuttle Operations	*42.9*
Launch Services	*0.8*
Space and Ground Networks, Communications and Data Systems	*39.3*
TOTAL	*$01.2*

*Currently under review

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EOUIPMENT OESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE STATION	HEAOOUARTERS LOCATION 1001-T1, 940086	TECHNICAL 6 MGMT INFORMATION SYS (TMIS)-SPACE STATION TMIS HW (D)	PROGRAM ENQINEERING AND INTEGRATION (PE&I)	1520.0
SPACE STATION	HEAOWARTERS LOCATION 1001-T2, 940088	ENGINEERING INTEGRATION OFFICE IRM-LEVEL II EIO (JSC) HW (D)	PROGRAM ENGINEERING AND INTEGRATION (PE&I)	262.0
SPACE STATION	AMES RESEARCH CENTER LOCATION 21FI-00, 940036	INFORMATION SCIENCES DIVISION-SPACE STATION FLIGHT SYSTEM	PROGRAM ENQINEERING AND INTEGRATION (PE&I)	336.1
SPACE STATION	LEWIS RESEARCH CENTER LOCATION 2202-85, 920026	SPACE STATIN SUPPORT-SPACE STATION SUPPORT SYSTEM HW	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCD)	1314.0
SPACE STATION	MARSHALL SPACE FLIGHT CENTER LOCATION 6203-CP, 940020	Central Processing System-CENTRAL PROCESSING SYSTEM	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCO)	933.0
SPACE STATION	MARSHALL SPACE FLIGHT CENTER LOCATION 6203-EO, 940024	Enhanced Oata System-ENHANCE0 OATA SYSTEM	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCO)	12813.0
SPACE STATION	MARSHALL SPACE FLIGHT CENTER LOCATION 6203-MS. 940032	Mission Support Services System-MISSION SUPPORT SERVICES SYSTEM	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCO)	2194.0
SPACE STATION	MARSHALL SPACE FLIGHT CENTER LOCATION 6203-PO, 940036	Payload Oata Services System-PAYLOAD DATA SERVICES SYSTEM	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCD)	1000.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION. AND ADP/EAD CONTROL NUMBER	EQUIPMENT OESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE STATION	HEAOOUARTERS LOCATION 1001-T1, 940086	TECHNICAL 6 MGMT INFORMATION SYS (TMIS)-SPACE STATION TMIS H/W (D)	PROGRAM ENGINEERING ANO INTEGRATION (PE&I)	1520.0
SPACE STATION	HEAOOUARTERS LOCATION 1001-T2, 940088	ENGINEERING INTEGRATION OFFICE IRM-LEVEL II EIO (JSC) HW (D)	PROGRAM ENGINEERING A M INTEGRATION (PE&I)	262.0
SPACE STATION	AMES RESEARCH CENTER LOCATION 21FI-00, 940036	INFORMATION SCIENCES DIVISION-SPACE STATION FLIGHT SYSTEM	PROGRAM ENGINEERING AND INTEGRATION (PE&I)	336.1
SPACE STATION	LEWIS RESEARCH CENTER LOCATION 2202-85, 920026	SPACE STATIN SUPPORT-SPACE STATION SUPPORT SYSTEM HW	OPERATIONS/ UTILIZATION CAPABILITY OEVELOPMENT (OUCD)	1314.0
SPACE STATION	MARSHALL SPACE FLIGHT CENTER LOCATION 6203-CP, 940020	Central Processing System-CENTRAL PROCESSING SYSTEM	OPERATIONS/ UTILIZATION CAPABILITV OEVELOPMENT (OUCD)	933.0
SPACE STATION	MARSHALL SPACE FLIGHT CENTER LOCATION 6203-EO, 940024	Enhancod Oata System-ENHANCE0 DATA SYSTEM	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCD)	12813.0
SPACE STATION	MARSHALL SPACE FLIGHT CENTER LOCATION 6203-MS, 940032	Mission Support Services System-MISSION SUPPORT SERVICES SYSTEM	OPERATIONS/ UTILIZATION CAPABILITY OEVELOPMENT (OUCD)	2194.0
SPACE STATION	MARSHALL SPACE FLIGHT CENTER LOCATION 6203-PO, 940036	Payload Oata Servlcss System-PAYLOAO DATA SERVICES SYSTEM	OPERATIONS/ UTILIZATION CAPABILITY OEVELOPMENT (OUCO)	1000.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE STATION	MARSHALL SPACE FLIGHT CENTER LOCATION 6203-PT. 940042	Payload Training Complex-PAYLOAD TRAINING COMPLEX	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCD)	906.0
SPACE STATION	MARSHALL SPACE FLIGHT CENTER LOCATION 6218-02, 940072	Telecommunications Mission Services-TELECOM MSN SVCS EQUIPMENT	PRESSURIZED MODULES	2110.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-D5, 940042	Space Station Training Facility-MISSION OPS DIR OPS AUTO DATA PROCESSING	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCD)	4810.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-D5, 940044	Space Station Training Facility-SPACE STATION TRNG FAC COMPUTATIONAL HOST	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCD)	16957.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-05. 940046	Space Station Training Facility-SPACE STATION TRNG FAC DATA DISTRIBUTION SYS	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCD)	841.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-D5, 940048	Space Station Training Facility-SPACE STATION TRNG FAC OEV & OPERATIONAL SUPP SYS	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCO)	1366.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-D5, 940050	Space Station Training Facility-SPACE STATION TRNG FAC EXTERNAL SIMULATION SYS	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCO)	917.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-D5, 940052	Space Station Training Facility- SPACE STATION TRNG FAC IMPROVEMENT	SPACE STATION OPERATIONS	327.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-D5, 940054	Space Station Training Facility- SPACE STATION TRNG FAC INSTRUCT & OPERATOR STATION	OPERATIONS/ UTILIZATION CAPABILITV OEVELOPMENT (OUCD)	797.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-D5, 940056	Space Station Training Facility- SPACE STATION TRNG FAC PART TASK TRAINER	OPERATIONS/ UTILIZATION CAPABILITY OEVELOPMENT (OUCD)	1690.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-D5, 940058	Space Station Training Facility- SPACE STATION TRNG FAC PROJECT SUPPORT	OPERATIONS/ UTILIZATION CAPABILITY OEVELOPMENT (OUCD)	450.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-D5, 940060	Space Station Training Facility- SPACE STATION TRNG FAC VISUAL SVS	OPERATIONS/ UTILIZATION CAPABILITY OEVELOPMENT (OUCD)	7510.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-D6, 940062	Space Station Control Center- MISSION OPS OIR OPS AUTO DATA PROCESSING	OPERATIONS/ UTILIZATION CAPABILITV OEVELOPMENT (OUCD)	1057.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-D6, 940066	Space Station Control Center- SPACE STATION CONTROL CNTR COMM & OATA SYS	OPERATIONS/ UTILIZATION CAPABILITV OEVELOPMENT (OUCD)	5349.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-D6, 940068	Space Station Control Center-SPACE STATION CONTROL CNTR DATA STORAGE SVS	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCO)	1175.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72OA-06. 940074	Space Station Control Center-SPACE STATION CONTROL CNTR PROJECT SUPPORT	OPERATIONS/ UTILIZATION CAPABILITY OEVELOPMENT (OUCD)	1000.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72DA-D6, 940076	Space Station Control Center-SPACE STATION CONTROL CNTR STANDARD ELEMENTS	OPERATIONS/ UTILIZATION CAPABILITY OEVELOPMENT (OUCD)	4304.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72EA-ER, 940112	Automation and Robotics	ASSEMBLY HARDWARE/ SUBSYSTEMS	1642.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72KA-K2, 940160	Data Support Systems-JSC DATA SUPPORT SYSTEM UPGRADE	ASSEMBLY HARDWARE/ SUBSVSTEMS	369.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72KA-K3, 940164	SSE Development Facility-RATIONAL - HW/SW	PROGRAM ENGINEERING AND INTEGRATION (PE&I)	586.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72KA-K3, 940166	SSE Development Facility-WORKSTATIONS & HOSTS - HW/SW	PROGRAM ENGINEERING AND INTEGRATION (PE&I)	2342.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72KA-K5, 940168	CSF/CAF-AUTOMATIC DATA PROCESSING EQPMT TEST EXECUTION SYS	ASSEMBLY HARDWARE/ SUBSYSTEMS	1629.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISTION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72KA-K5, 940170	CSF/CAF-AUTOMATIC OATA PROCESSING EQUIPMENT SUPPORT SYSTEM	ASSEMBLY HARDWARE/ SUBSYSTEMS	629.0
SPACE STATION	JOHNSON SPACE CENTER LOCATION 72SA-S4, 940232	Man-Systems Laboratories-SP/ MAN-SYSTEMS OIV FIPR HARDWARE	ASSEMBLY HARDWARE/ SUBSYSTEMS	1043.O
SPACE STATION	KENNEDY SPACE CENTER LOCATION 7612-02, 940090	Payload Data Management System-PAYLOAD OATA MANAGEMENT SYSTEMS	OPERATIONS/ UTILIZATION CAPABILITY OEVELOPMENT (OUCO)	2873.0
SPACE STATION	KENNEDY SPACE CENTER LOCATION 7624-FB, 940136	Space Station Test, Ctrl and Mntr Sys-SPACE STATION TEST, CONTROL AND MONITOR SYS	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCO)	10671.O
SPACE STATION	KENNEDY SPACE CENTER LOCATION 7624-FO. 940138	Space Station Software Dev Facillty-SPACE STATION S/W DEVELOPMENT FACILITY	OPERATIONS/ UTILIZATION CAPABILITY DEVELOPMENT (OUCD)	1777.O
SPACE STATION	KENNEDY SPACE CENTER LOCATION 7624-82, 940140	Automated Test Equipment-AUTOMATED TEST EQUIPMENT	OPERATIONS/ UTILIZATION CAPABILITY OEVELOPMENT (OUCD)	2638.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISTION OBLIGATIONS

PROGRAM EUOGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION. AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE TRANSPORTATION CAPAEILITV OEVELOPMENT	MARSHALL SPACE FLIGHT CENTER LOCATION 6201-AC. 940012	Reposltory Auto. Optical Imaglng System-REPOSITORY AUTOMATE0 OPTICAL IMAGING SVSTEM	OPERATIONS SUPPORT	430.0
SPACE TRANSPORTATION CAPABILITY OEVELOPMENT	MARSHALL SPACE FLIGHT CENTER LOCATION 6203-DD, 940022	Oata Acquisition and Distribution System-DATA ACQUISITION AND OISTRIEUTION SVSTEM	SPACELAB OPERATIONS	4386.0
SPACE TRANSPORTATION CAPAEILITV OEVELOPMENT	MARSHALL SPACE FLIGHT CENTER LOCATION 6203-PP. 940040	Perlpheral Processing System-PERIPHERAL PROCESSING SVSTEM	SPACELAB OPERATIONS	3816.0
SPACE TRANSPORTATION CAPABILITY OEVELOPMENT	MARSHALL SPACE FLIGHT CENTER LOCATION 6206-04, 940050	**ADVANCED PROPULSION TECH. SIMULATION-ADVANCED PROPULSION TECHNOLOGY**	AOVANCEO TRANSPORTATION TECHNOLOGY	2400.0
SPACE TRANSPORTATION CAPAEILITV OEVELOPMENT	MARSHALL SPACE FLIGHT CENTER LOCATION 6213-01, 940068	Propulsion Test Oata Acquisition System-PROPULSION TEST DATA ACQUISITION SVSTEM	AOVANCEO TRANSPORTATION TECHNOLOGY	628.0
SPACE TRANSPORTATION CAPABILITY OEVELOPMENT	MARSHALL SPACE FLIGHT CENTER LOCATION 6201-01, 940086	Engineering Analysis and Data System-ENGINEERING ANALYSIS & DATA SVSTEM	RESEARCH 6 TEST OPERATIONS	13980.0
SPACE TRANSPORTATION CAPABILITV DEVELOPMENT	STENNIS SPACE CENTER LOCATION 6400- , 940012	Center ADP Activity-PROGRAM SUPPORT ADP EQUIPMENT PURCHASES	OPERATIONS SUPPORT	334.4
SPACE TRANSPORTATION CAPABILITV OEVELOPMENT	STENNIS SPACE CENTER LOCATION 6400-02, 940022	CADD Systems for General Use-FACILITV OPS SUPPORT CONTRACTOR CADD/ENGINEERING	OPERATIONS SUPPORT	425.8

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	STENNIS SPACE CENTER LOCATION 6400-02, 940024	CADD Systems for General Use-FACILITY OPS SUPPORT CONTRACTOR/CADD ENGINEERING	OPERATIONS SUPPORT	330.0
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	STENNIS SPACE CENTER LOCATION 6400-03, 940026	Propulsion Test Operations-PROPULSION TEST OPERATIONS HARDWARE	ADVANCED TRANSPORTATION TECHNOLOGY	569.3
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	JOHNSON SPACE CENTER LOCATION 72NA-N1, 940176	JSC SR&QA Office Automation-LOCAL AREA NTWK/OFF AUTO CAPITAL INVESTMENT	RESEARCH 6 TEST OPERATIONS	360.3
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	JOHNSON SPACE CENTER LOCATION 72PA-P2, 940420	Engineering Computation Facility-ENG COMP FAC H/W LEASE TO OWNERSHIP PLAN	RESEARCH 6 TEST OPERATIONS	6693.0
SPACE TRANSPORTATION CAPABILITY DEVELOPMENT	KENNEDY SPACE CENTER LOCATION 7630-61. 940154	Payload Network System-PAYLOAD NETWORK SYSTEM	MULTIMISSION 6 PAYLOAD SUPPORT EOU P	396.8

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SUMMARY OF MAJOR ADP EQUIPMENT AQUISTION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE SHUTTLE PRODUCTION AND OPERATIONAL CAPABILITY	JOHNSON SPACE CENTER LOCATION 72DA-D2, 940032	Mission Control Center-MISSION CONTROL CENTER EOUIPMENT REPLACEMENT	LAUNCH AND MISSION SUPPORT	4850.0
SPACE SHUTTLE PRODUCTION AND OPERATIONAL CAPABILITY	JOHNSON SPACE CENTER LOCATION 72DA-D7, 940080	Shuttle Mission Simulator-MISSION OPS OIR OPS AUTO DATA PROCESSING	LAUNCH AND MISSION SUPPORT	1927.0
SPACE SHUTTLE PRODUCTION AND OPERATIONAL CAPABILITY	JOHNSON SPACE CENTER LOCATION 72DA-D7, 940082	Shuttle Mission Simulator-SHUTTLE MISSION TRNG FAC EQUIPMENT REPLACEMENT	LAUNCH AND MISSION SUPPORT	7398.0
SPACE SHUTTLE PRODUCTION AND OPERATIONAL CAPABILITY	JOHNSON SPACE CENTER LOCATION 72DA-D7, 940084	Shuttle Mission Simulator-SHUTTLE MISSION TRNG FAC IMPROVEMENT	LAUNCH AND MISSION SUPPORT	310.0
SPACE SHUTTLE PRODUCTION AND OPERATIONAL CAPABILITY	JOHNSON SPACE CENTER LOCATION 72EA-EF, 940096	Software Development Facility-ACOUISITION DF S/W DEV FAC CAPITAL EOUIPMENT	ORBITER	608.0
SPACE SHUTTLE PRODUCTION AND OPERATIONAL CAPABILITY	JOHNSON SPACE CENTER LOCATION 72GA-G1, 940130	Integrated Management Information Center-INTEGRATED MANAGEMENT INFORMATION COMPUTER	ORBITER	2500.0
SPACE SHUTTLE PRODUCTION AND OPERATIONAL CAPABILITY	JOHNSON SPACE CENTER LOCATION 72GA-G1, 940132	Integrated Management Information Center-OFFICE AUTOMATION SYSTEM	LAUNCH AND MISSION SUPPORT	1000.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
PHYSICS AND ASTRONOMY	GODOARD SPACE FLIGHT CENTER LOCATION 5101-AA, 940014	SPACE AND EARTH SCIENCES COMPUTING CTR-SPACE AND EARTH SCIENCES COMPUTING CENTER	ASTROPHYSICS MISSION OPERATIONS 6 DATA ANALYSIS	466.0
PHYSICS AND ASTRONOMY	GODOARD SPACE FLIGHT CENTER LOCATION 5101-AN, 940028	SPACE TELESCOPE SCIENCE SYSTEM-SPACE TELESCOPE SCIENCE SYSTEM	HUBBLE SPACE TELESCOPE (HST) OPERATIONS AND SERVICING	580.0
PHYSICS A M ASTRONOMY	GODDARD SPACE FLIGHT CENTER LOCATION 5103-AD, 940044	SPACECRAFT TECHNOLOGY SYSTEM-SPACECRAFT TECHNOLOGY SYSTEM	X-RAY TIMING EXPLORER (XTE) DEVELOPMENT	256.0
PHYSICS AND ASTRONOMY	GODDARD SPACE FLIGHT CENTER LOCATION 5103-AG, 940048	HIGH ENERGY ASTROPHYSICS DATA ACO-HIGH ENERGY ASTROPHYSICS DATA ACQUISITION 6 PROC	X-RAY TIMING EXPLORER (XTE) DEVELOPMENT	313.0
PHYSICS A M ASTRONOMY	MARSHALL SPACE FLIGHT CENTER LOCATION 6203-PC. 940034	Payload Crew Training Complex-PAYLOAD CREW TRAINING COMPLEX	SPACELAB MISSION MGT--APPROVED MISSN	405.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
PLANETARY EXPLORATION	JET PROPULSION LABORATORY LOCATION 5516-SO. 910052	OPERATIONAL SYSTEMS-NOT SELECTED; CASSINI	MISSION OPERATIONS & DATA ANALYSIS	**3037.0**
PLANETARY EXPLORATION	JET PROPULSION LABORATORY LOCATION 5516-OP. 920044	DEVELOPMENT AND PROTOTYPE SYSTEMS-NOT SELECTED; SFOC REPLENISHMENT & SUSTAINING	MISSION OPERATIONS & OATA ANALYSIS	946.0
PLANETARY EXPLORATION	JET PROPULSION LABORATORY LOCATION 5516-SO, 920046	OPERATIONAL SYSTEMS-NOT SELECTED; MARS OBSERVWORKSTATIONS	MISSION OPERATIONS & DATA ANALYSIS	449.O
PLANETARY EXPLORATION	JET PROPULSION LABORATORY LOCATION 5516-SO, 920056	OPERATIONAL SYSTEMS-MIPS GLL ADAPTATION HW ACO AND MSTP	MISSION OPERATIONS & OATA ANALYSIS	2589.0
PLANETARY EXPLORATION	JET PROPULSION LABORATORY LOCATION 5516-OP. 920058	DEVELOPMENT AND PROTOTYPE SYSTEMS-NOT SELECTED; TEST STRING	MISSION OPERATIONS & OATA ANALYSIS	520.0
PLANETARY EXPLORATION	JET PROPULSION LABORATORY LOCATION 5516-OP. 930038	DEVELOPMENT AND PROTOTYPE SYSTEMS-SYSTEM OEVELOPMENT	MISSION OPERATIONS & DATA ANALYSIS	1993.O
PLANETARY EXPLORATION	JET PROPULSION LABORATORY LOCATION 5500- . 940016	JPL - ADP ACTIVITY-COMPUTER PROCUREMENT	**CASSINI**	366.O
PLANETARY EXPLORATION	JET PROPULSION LABORATORY LOCATION 5500- , 940022	JPL - ADP ACTIVITY-RADSTONE BOARDS	**CASSINI**	277.O
PLANETARY EXPLORATION	JET PROPULSION LABORATORY LOCATION 5516-SO, 940036	OPERATIONAL SYSTEMS-SUPPORT EOUIPMENT	**CASSINI**	1164.O

SUMMARY OF MAJOR ADP EQUIPMENT OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE APPLICATIONS	AMES RESEARCH CENTER LOCATION 21EO-03. 940028	NASA SCIENCE INTERNET OFFICE-HARDWARE PURCHASE	DATA SYSTEMS	1060.7
SPACE APPLICATIONS	GOODARD SPACE FLIGHT CENTER LOCATION 5101-AB. 940016	NATIONAL SPACE SCIENCE DATA CENTER SYS-NATIONAL SPACE SCIENCE DATA CENTER SYSTEM	DATA SYSTEMS	264.0
SPACE APPLICATIONS	GOOOARO SPACE FLIGHT CENTER LOCATION 5103-AN, 940060	EARTH OBSERVING SYSTEM - DATA INFO SYS-EARTH OBSERVING SYSTEM - DATA INFORMATION SYSTEM	EARTH OBSERVING SYSTEM (EOS) DATA INFORMATION SYSTEM (DIS)	25010.0
SPACE APPLICATIONS	GOOOARO SPACE FLIGHT CENTER LOCATION 5103-BE. 940064	APPLICATIONS IMAGE PROCESSING SYSTEM-APPLICATIONS IMAGE PROCESSING SYSTEM	TROPICAL RAINFALL MEASURING MISSION (TRMM)	845.0
SPACE APPLICATIONS	GOOOARO SPACE FLIGHT CENTER LOCATION 5101-AA. 940256	SPACE AND EARTH SCIENCES COMPUTING CTR-SPACE AND EARTH SCIENCES COMPUTING CENTER	DATA SYSTEMS	7095.0
SPACE APPLICATIONS	GOOOARO SPACE FLIGHT CENTER LOCATION 5101-AB. 940258	NATIONAL SPACE SCIENCE DATA CENTER SYS-NATIONAL SPACE SCIENCE DATA CENTER SYSTEM	DATA SYSTEMS	425.0
SPACE APPLICATIONS	JET PROPULSION LABORATORY LOCATION 5511-AA. 920014	AOMINISTRATIVE APPLICATIONS SYSTEMS-IBM 3090-200 ALTERNATE PURCHASE PLAN	APPL SYSTEMS ANALYSES AND STUOIES	1276.0
SPACE APPLICATIONS	JET PROPULSION LABORATORY LOCATION 5511-CN. 920016	COMMUNICATIONS AND NETWORK EOUIPMENT-INSTITUTIONAL LOCAL AREA NETWORK	APPL SYSTEMS ANALYSES AND STUDIES	550.0

SUMMARY OF MAJOR ADP EQUIPMNET AQUISTION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, ANO ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	PY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE APPLICATIONS	JET PROPULSION LABORATORY LOCATION 5517-SS. 920072	ENGINEERING SERVICES SUPPORT SYSTEMS-CAD/CAE WORKSTATIONS AND PERIPHERAL EQUIPMENT	APPL SYSTEMS ANALYSES AND STUDIES	300.0
SPACE APPLICATIONS	JET PROPULSION LABORATORY LOCATION 5511-CN. 930014	COMMUNICATIONS AND NETWORK EQUIPMENT-BLOG. 525 COMMUNICATIONS	APPL SYSTEMS ANALYSES AND STUDIES	500.0
SPACE APPLICATIONS	JET PROPULSION LABORATORY LOCATION 5518-IL. 930042	INSTRUMENT LOAN POOL SUPPORT SYSTEMS-INSTRUMENT CONTROLLERS	APPL SYSTEMS ANALYSES AND STUDIES	1250.0
SPACE APPLICATIONS	JET PROPULSION LABORATORY LOCATION 5500- . 940026	JPL - AOP ACTIVITY-SUN WORKSTATIONS	APPL SYSTEMS ANALYSES AND STUDIES	300.0
SPACE APPLICATIONS	JET PROPULSION LABORATORY LOCATION 5517-TP. 940040	TECHNICAL DATA PROCESSING SUPPORT SYSTEM-GDPS & SDCS-SIRC/GRND OP SYS & SAR DATA CAT SYS	SHUTTLE/SPACELAB PAYLOAD DEVELOPMENT	582.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
COMMERCIAL USE OF SPACE	STENNIS SPACE CENTER LOCATION 6400- , 940016	Center ADP Activity-SCIENCE AND TECHNOLOGY LABORATORY COMMERCIAL	COMMERCIAL USE OF SPACE	425.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT OESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
AERONAUTICAL RESEARCH & TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21FL-01. 940040	AEROSPACE HUMAN FACTORS RESEARCH (DACI)-ACFS-COCKPIT GRAPHICS UPDATE	AERONAUTICS R&T BASE	320.1
AERONAUTICAL RESEARCH & TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21FL-01. 940042	AEROSPACE HUMAN FACTORS RESEARCH (DACI)-ATC COMPUTER REHOSTING	AERONAUTICS R6T BASE	533.6
AERONAUTICAL RESEARCH 6 TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21FS-00, 940044	FLIGHT SYSTEMS AND SIMULATION RESEARCH-HARDWARE PURCHASE	AERONAUTICS R&T BASE	1003.1
AERONAUTICAL RESEARCH 6 TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21FS-01, 940046	FLIGHT SYSTEMS AND SIMULATXON RESEARCH-HARDWARE PURCHASE	AERONAUTICS R&T BASE	426.8
AERONAUTICAL RESEARCH 6 TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21RN-00, 940054	NUMERICAL AERODYNAMIC SIMULATION SYSTEMS-APPLIED RESEARCH - H/W	NUMERICAL AERODYNAMIC SIMULATION (NAS)	843.0
AERONAUTICAL RESEARCH & TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21RN-00, 940056	NUMERICAL AERODYNAMIC SIMULATION SYSTEMS-DATA NETWORK SUBSYSTEMS	NUMERICAL AEROOYNAMIC SIMULATION (NAS)	2652.0
AERONAUTICAL RESEARCH 6 TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21RN-00, 940058	NUMERICAL AEROOYNAMIC SIMULATION SYSTEMS-GRID DEVELOPMENT	NUMERICAL AERODYNAMIC SIMULATION (NAS)	384.O
AERONAUTICAL RESEARCH & TECHNOLOGY	AYES RESEARCH CENTER LOCATION 21RN-00, 940060	NUMERICAL AEROOYNAMIC SIMULATION SYSTEMS-MASS STORAGE DEVELOPMENT	NUMERICAL AERODYNAMIC SIMULATION (NAS)	5336.0
AERONAUTICAL RESEARCH 6 TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21RN-00. 940062	NUMERICAL AERODYNAMIC SIMULATION SYSTEMS-OPERATIONS H/W	NUMERICAL AERODYNAMIC SIMULATION (NAS)	1921.O

SUMMARY OF MAJOR ADP EQUIPMENT AQUISTION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
AERONAUTICAL RESEARCH 6 TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21RN-00, 940066	NUMERICAL AERODYNAMIC SIMULATION SYSTEMS-SCIENTIFIC ANALYSIS SYSTEMS	NUMERICAL AERODYNAMIC SIMULATION (NAS)	1067.0
AERONAUTICAL RESEARCH 6 TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21RN-00. 940068	NUMERICAL AERODYNAMIC SIMULATION SYSTEMS-WKS DEVELOPMENT	NUMERICAL AERODYNAMIC SIMULATION (NAS)	3106.0
AERONAUTICAL RESEARCH 6 TECHNOLOGV	AMES RESEARCH CENTER LOCATION 21RT-00. 940072	THERMOSCIENCES DIVISION-HARDWARE PURCHASE (INSTR. INITIATIVE)	AERONAUTICS R&T BASE	266.8
AERONAUTICAL RESEARCH 6 TECHNOLOGV	AMES RESEARCH CENTER LOCATION 21RO-01. 940074	AMES HPCCP CONSOLIOATED ADP-ADVANCED PROTOTYPE SYSTEMS-HARDWARE	HIGH-PERFORMANCE COMPUTING	800.3
AERONAUTICAL RESEARCH 6 TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21RO-01. 940078	AMES HPCCP CONSOLIOATEO ADP-HARDWARE PUCHASES-ROUTERS;DSU/CSU (EDC)	HIGH-PERFORMANCE COMPUTING	885.7
AERONAUTICAL RESEARCH & TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21RO-01, 940080	AMES HPCCP CONSOLIOATEO ADP-HIGH PERFORMANCE COMPUTING RESEARCH-H/W	HIGH-PERFORMANCE COMPUTING	6829.4
AERONAUTICAL RESEARCH & TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21FS-01, 940120	FLIGHT SYSTEMS AND SIMULATION RESEARCH-HAROWARE LEASE	AERONAUTICS R&T BASE	373.5
AERONAUTICAL RESEARCH 6 TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21RN-00, 940126	NUMERICAL AEROOYNAMIC SIMULATION SVSTEMS-HIGH SPEED PROCESSOR 3	NUMERICAL AEROOVNAMIC SIMULATION (NAS)	3537.0
AERONAUTICAL RESEARCH 6 TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21RN-00, 940128	NUMERICAL AERODYNAMIC SIMULATION SYSTEMS-HIGH SPEED PROCESSOR 4	NUMERICAL AERODYNAMIC SIMULATION (NAS)	5232.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
AERONAUTICAL RESEARCH & TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21RN-00, 940138	NUMERICAL AEROOYNAMIC SIMULATION SYSTEMS-OPERATIONS-HSP4	NUMERICAL AEROOYNAMIC SIMULATION (NAS)	2215.0
AERONAUTICAL RESEARCH & TECHNOLOGY	AMES RESEARCH CENTER LOCATION 21RN-00, 940140	NUMERICAL AEROOYNAMIC SIMULATION SYSTEMS-PROGRAM SUPPORT	NUMERICAL AERODYNAMIC SIMULATION (NAS)	651.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LEWIS RESEARCH CENTER LOCATION 2201-VC. 890030	CENTRAL SCIENTIFIC CLUSTER-CENTRAL SCIEN. CLUSTER HARDWARE	AERONAUTICS R&T BASE	325.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LEWIS RESEARCH CENTER LOCATION 2201-03, 900036	CAOAM SYS-SCIENTIFIC SYSTEM HARDWARE	AERONAUTICS R&T BASE	500.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LEWIS RESEARCH CENTER LOCATION 2200- , 930018	LERC - ADP ACTIVITY-LEWIS INFO. NETWK COMPONENTS	AERONAUTICS R&T BASE	520.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LEWIS RESEARCH CENTER LOCATION 2200- , 930020	LERC - ADP ACTIVITY-MAINT/ OPERATIONS CONTRACT (CCNS)	AERONAUTICS R&T BASE	1058.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LEWIS RESEARCH CENTER LOCATION 2201-07, 930026	SCIENTIFIC MINI SUPER SYS-CONVEX COMPUTER HARDWARE	AERONAUTICS R&T BASE	300.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LEWIS RESEARCH CENTER LOCATION 2201-08, 930028	LEWIS INFO MANAGEMENT SYS-LEWIS INFO. MGT. SYS. HARDWARE	AERONAUTICS R&T BASE	344.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LEWIS RESEARCH CENTER LOCATION 2202-93, 930036	TRAOAR REPLACEMENT-TRANSIENT DATA RECORDER III HW	AERONAUTICS R&T BASE	250.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
AERONAUTICAL RESEARCH & TECHNOLOGY	LEWIS RESEARCH CENTER LOCATION 2200- . 940014	LERC - ADP ACTIVITY-ARCHIVAL MASS STORAGE HARDWARE	AERONAUTICS R&T EASE	520.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LEWIS RESEARCH CENTER LOCATION 2201-03, 940020	CAOAM SYS-INTERACTIVE COMP. ASSISTED RES. & ENGR. SYS HDW	AERONAUTICS R&T EASE	250.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LEWIS RESEARCH CENTER LOCATION 2201-04. 940030	HIGH SPEED COMPUTATIONAL SYS-SUPER-COMPUTER HARDWARE	AERONAUTICS R&T EASE	11300.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LANGLEY RESEARCH CENTER LOCATION 2302-10, 890018	LARC CENTRAL SCIENTIFIC COMPUTER COMPLEX-MASS STORAGE	AERONAUTICS R&T EASE	1000.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LANGLEY RESEARCH CENTER LOCATION 2302-10, 890026	LARC CENTRAL SCIENTIFIC COMPUTER COMPLEX-NETWORKS LOCAL AND DISTRIEUTED	AERONAUTICS R&T BASE	1000.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LANGLEV RESEARCH CENTER LOCATION 2302-10, 890028	LARC CENTRAL SCIENTIFIC COMPUTER COMPLEX-SUPER COMPUTING AND MASSIVELY PARALLEL	AERONAUTICS R&T EASE	9100.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LANGLEY RESEARCH CENTER LOCATION 2302-10, 890034	LARC CENTRAL SCIENTIFIC COMPUTER COMPLEX-PERIPHERALS-SIMULATION GRAPHICS	AERONAUTICS R&T BASE	3900.0
AERONAUTICAL RESEARCH & TECHNOLOGV	LANGLEY RESEARCH CENTER LOCATION 2304-20, 910042	STRUCTURES RESEARCH DATA SYSTEMS-TDT DATA SYS UPGRADE	AERONAUTICS R&T BASE	700.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILOING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
AERONAUTICAL RESEARCH ■ TECHNOLOGY	LANGLEY RESEARCH CENTER LOCATION 2304-30, 930036	AERONAUTICS RESEARCH DATA SYSTEMS-UNITARY PLAN WIND TUNNEL UPGRADE	AERONAUTICS R&T BASE	400.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LANGLEY RESEARCH CENTER LOCATION 2304-20, 930044	STRUCTURES RESEARCH DATA SYSTEMS-STRUCTURES COMPLEX UPGRAOE	AERONAUTICS RIT BASE	250.0
AERONAUTICAL RESEARCH & TECHNOLOGY	LANGLEY RESEARCH CENTER LOCATION 2302-10, 940012	LARC CENTRAL SCIENTIFIC COMPUTER COMPLEX-HIGH PERFORMANCE COMPUTING	HIGH-PERFORMANCE COMPUTING	900.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE SHUTTLE PRODUCTION AND OPERATIONAL CAPABILITV	KENNEDY SPACE CENTER LOCATION 7601-F1, 940012	Central Data System-CENTRAL DATA SYSTEM	LAUNCH SITE EOUIPMENT	920.0
SPACE SHUTTLE PRODUCTION AND OPERATIONAL CAPABILITV	KENNEOV SPACE CENTER LOCATION 7601-MI. 940016	Checkout. Control and Monitor System-CHECKOUT. CONTROL, & MONITOR SUBSVSTEM	LAUNCH SITE EQUIPMENT	8843.0

SUMMARY OF MAJOR EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE TRANSPORTATION OPERATIONS	MARSHALL SPACE FLIGHT CENTER LOCATION 6202-01. 940018	Slidell Computer Complex-FR-80 REPLACEMENT	FLIGHT HARDWARE	386.0
SPACE TRANSPORTATION OPERATIONS	MARSHALL SPACE FLIGHT CENTER LOCATION 6203-MI, 940030	Meteorological Interactive Data Disp Sys-METEOROLOGICAL INTERACTIVE DATA DISPLAY SYSTEM	FLIGHT HARDWARE	400.0
SPACE TRANSPORTATION OPERATIONS	MARSHALL SPACE FLIGHT CENTER LOCATION 6202-01, 940092	Slidell Computer Complex-SLIDELL COMPUTER COMPLEX MASS STORAGE AUGMENTATION	FLIGHT HARDWARE	505.0
SPACE TRANSPORTATION OPERATIONS	MARSHALL SPACE FLIGHT CENTER LOCATION 6202-01. 940094	Slidell Computer Complex-TAPE CARTRIDGE SUBSYSTEM AUTOMATION	FLIGHT HARDWARE	460.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72CA-C3. 940014	Flight Crew Operations Office	FLIGHT OPERATIONS	528.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72CA-C4, 940018	Shuttle Training Software-SHUTTLE TRNG AIRCRAFT SYSTEMS SUPP	FLIGHT OPERATIONS	261.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72DA-DA, 940020	Flight Design Computation Facility-FLIGHT DESIGN COMP FAC RECURRING MAINT	FLIGHT OPERATIONS	263.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72OA-OB. 940022	Software Production Facility-S/W PRODUCTION FAC RECURRING MA1NT	FLIGHT OPERATIONS	366.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72DA-OC. 940024	MOO Consolidated Support-CONSOLIDATED SUPP IMPROVEMENT	FLIGHT OPERATIONS	3977.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72DA-DC, 940026	MOO Consolidated Support-CONSOLIDATED SUPPORT RECURRING MAINT	FLIGHT OPERATIONS	4566.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72DA-D1, 940028	MOD Office Automation-MISSION OPS OIR EOUIPMENT REPLACEMENT	FLIGHT OPERATIONS	6871.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72DA-D2, 940034	Mission Control Center-MISSION CONTROL CENTER RECURRING MAINT	FLIGHT OPERATIONS	554.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72DA-D8, 940088	Shuttle Avionics & Integration Lab-SHUTTLE AVIONIC INTEGRATION LA6 RECURRING MAINT	FLIGHT OPERATIONS	289.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION- 72EA-EC. 940092	Crew and Thermal Engineering Systems-CREW AND THERMAL ENGINEERING PURCHASE ADP HARDWA	FLIGHT OPERATIONS	933.1
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72EA-EG, 940102	Navigation. Control and	FLIGHT OPERATIONS	799.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72EA-EK, 940104	Flight Data Systems-FLIGHT DATA SYSTEMS PURCHASE ADP HARDWA	FLIGHT OPERATIONS	824.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION. AND ADP/EAD CONTROL NUMBER	EOUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OELIGATIONS ($ IN THOUSANDS)
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72EA-EP, 940106	Propu1Sion and Power	FLIGHT OPERATIONS	275.1
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72EA-ES. 940114	Structures & Mechantcs Engineering Sys-STRUCTURES & MECHANICS ENGINEE PURCHASE ADP HARDWA	FLIGHT OPERATIONS	749.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72EA-ET. 940120	Systems Engtneering Division-SYSTEMS ENGINEERING DIVISION PURCHASE ADP HAROWA	FLIGHT OPERATIONS	539.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72EA-P5, 940124	ISD Center Information System-INFO SVS OIR INSTITUTIONAL SUPPORT FOR ENG OIR	FLIGHT OPERATIONS	300.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72EA-P9, 940126	ISD JSC Engineering & Science Network-INFO SYS OIR INSTITUTIONAL SUPPORT FOR ENG DIR	FLIGHT OPERATIONS	376.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72GA-G1, 940128	Integrated Management	FLIGHT OPERATIONS	870.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72PA-PD, 940192	Customer Support-USER WORK STATION RESUPPLY. SPARES CSC	FLIGHT OPERATIONS	322.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72PA-P5, 940206	Center Information System-CENTER INFO SVS HOST UPGRADE	FLIGHT OPERATIONS	1735.1

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72PA-P6, 940208	Software Technology Lab-SOFTWARE TECHNOLOGY LAB PURCHASE ADP HARDWA	FLIGHT OPERATIONS	365.1
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72PA-P8, 940214	JSC Information Network and FMNET-JSC INFO NTWK NEW MATERIALS	FLIGHT OPERATIONS	640.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72SA-S5, 940234	Crew Compartment Configuration-SP/MAN-SYSTEMS DIV FIPR HARDWARE	FLIGHT OPERATIONS	689.0
SPACE TRANSPORTATION OPERATIONS	JOHNSON SPACE CENTER LOCATION 72PA-P5, 940422	Center Information System-CENTER INFO SYS HOST UPGRAOE	FLIGHT OPERATIONS	545.
SPACE TRANSPORTATION OPERATIONS	KENNEDY SPACE CENTER LOCATION 7623-S5, 940128	LPS Software Development Network-LPS S/W DEVELOP NETWORK	LAUNCH AND LANDING OPERATIONS	830.0
SPACE TRANSPORTATION OPERATIONS	KENNEDY SPACE CENTER LOCATION 7623-25, 940132	SPC Design Engineering Computer System-SPC DESIGN ENGR COMPUTER SYS	LAUNCH AND LANDING OPERATIONS	320.0
SPACE TRANSPORTATION OPERATIONS	KENNEDY SPACE CENTER LOCATION 7629-A4, 940148	Microcomputing Support-MICRO COMPUTING SUPPORT	FLIGHT OPERATIONS	256.0
SPACE TRANSPORTATION OPERATIONS	KENNEDY SPACE CENTER LOCATION 7602-J3, 940296	Kennedy Inventory Management System-KENNEDY INVENTORY MANAGEMENT SYSTEM	FLIGHT OPERATIONS	526.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION. AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
EXPENDABLE LAUNCH VEHICLES	KENNEDY SPACE CENTER LOCATION 7605-83, 940046	Expendable Vehicles Telemetry System-EXPENDABLE VEHICLES TELEMETRY SYSTEMS	DELTA	700.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE ANO GROUND NETWORK, COMMUNICATIONS AND DATA SYSTEMS	AMES RESEARCH CENTER LOCATION 21XR-01. 940090	DRYOEN RESEARCH ENGINEERING DIVISION - C-SERV I - HARDWARE PURCHASE	GROUND NETWORK	443.9
SPACE AND GROUND NETWORK, COWNICATIONS AND OATA SYSTEMS	AMES RESEARCH CENTER LOCATION 21XR-01. 940092	ORYOEN RESEARCH ENGINEERING DIVISION - C-TRACKING SYS UPGRADES	GROUND NETWORK	277.4
SPACE AND GROUND NETWORK, COWNICATIONS AND DATA SYSTEMS	AMES RESEARCH CENTER LOCATION 21XR-01. 940094	ORYOEN RESEARCH ENGINEERING DIVISION - C-TRAPS SVS UPGRADE	GROUNO NETWORK	2325.2
SPACE AND GROUNO NETWORK, COMMUNICATIONS AND DATA SYSTEMS	GOOOARO SPACE FLIGHT CENTER LOCATION 5101-AC. 940018	CENTRAL TELEMETRY OP AND DATA HANOLING-CENTRAL TELEMETRY DATA PROCESSING & DATA SYSTEM	COMMUNICATIONS AND DATA SYSTEMS	2100.0
SPACE AND GROUNO NETWORK, COMMUNICATIONS AND DATA SYSTEMS	GOOOARO SPACE FLIGHT CENTER LOCATION 5103-BG, 940066	SPACELAB INPUT PROCESSING SYSTEM-SPACELAB INPUT PROCESSING SYSTEM	COMMUNICATIONS AND DATA SYSTEMS	1630.0
SPACE ANO GROUNO NETWORK, COMMUNICATIONS ANO DATA SYSTEMS	GODDARD SPACE FLIGHT CENTER LOCATION 5103-BK. 940068	MISSION AND OATA OPERATIONS TEST BED PRO-MISSION & DATA OPERATIONS TEST BED PROCESSING	COWNICATIONS AND DATA SYSTEMS	1414.0
SPACE AND GROUNO NETWORK, COMMUNICATIONS AND DATA SYSTEMS	GODDARD SPACE FLIGHT CENTER LOCATION 5104-AA. 940090	NASA COMMUNICATIONS SYSTEM (NASCOM)-NASA COMMUNICATIONS SYSTEM (NASCOM)	COMMUNICATIONS AND DATA SYSTEMS	906.0

SUMMARY OF MAJOR ADP EQUIPMENT AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE AND GROUND NETWORK, COMMUNICATIONS AND DATA SYSTEMS	GODDARD SPACE FLIGHT CENTER LOCATION 5106-AE. 940098	MULTI-SATELLITE OPERATIONS CONTROL CTR-MULTI-SATELLITE OPERATIONS CONTROL CENTER	COMMUNICATIONS AND OATA SYSTEMS	10157.0
SPACE AND GROUND NETWORK, COMMUNICATIONS AND DATA SYSTEMS	GODDARD SPACE FLIGHT CENTER LOCATION 5106-BB, 940102	COMMAND MANAGEMENT SYSTEM-COMMAND MANAGEMENT SYSTEM	COMMUNICATIONS AND DATA SYSTEMS	1447.0
SPACE AND GROUND NETWORK, CDMMUNICATIONS AND. DATA SYSTEMS	GODOARD SPACE FLIGHT CENTER LOCATION 5106-BC, 940104	OPERATIONS SUPPORT COMPUTING FAC SYS-OPERATIONS SUPPORT COMPUTING FACILITY SVSTEM	COMMUNICATIONS AND DATA SYSTEMS	2970.0
SPACE AND GROUND NETWORK, COMMUNICATIDNS AND OATA SYSTEMS	GODDARD SPACE FLIGHT CENTER LOCATION 5106-BD, 940106	SHUTTLE PDCC INTERFACE FACILITY SYSTEM-SHUTTLE POCC INTERFACE FACILITY SYSTEM	COMMUNICATIONS AND OATA SYSTEMS	3995.0
SPACE AND GROUND NETWORK, COMMUNICATIONS AND DATA SYSTEMS	GODDARD SPACE FLIGHT CENTER LOCATION 5101-AC. 940260	CENTRAL TELEMETRY DP AND DATA HANDLING-CENTRAL TELEMETRY DATA PROCESSING & DATA SYSTEM	COMMUNICATIONS AND DATA SYSTEMS	301.0
SPACE AND GROUND NETWORK, COMMUNICATIONS AND DATA SYSTEMS	GODDARD SPACE FLIGHT CENTER LOCATION 5105-AB. 940268	TRACKING AND DATA RELAY SATELLITE SYSTEM-TRACKING AND OATA RELAY SATELLITE SYSTEM	SPACE NETWORK	300.0
SPACE AND GROUND NETWORK, COMMUNICATIDNS AND DATA SVSTEMS	JET PROPULSION LABORATORY LOCATION 5512-DD, 900034	DEEP SPACE NETWORK OPERATIONAL SYSTEMS-HIGH RATE TELEMETRY	GROUND NETWORK	400.0

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SUMMARY OF MAJOR ADP EQUIPMNET AQUISITION OBLIGATIONS

PROGRAM BUDGET LINE ITEM	RECEIVING INSTALLATION BUILDING LOCATION, AND ADP/EAD CONTROL NUMBER	EQUIPMENT DESCRIPTION	PROGRAMMATIC PURPOSE	FY(94) OBLIGATIONS ($ IN THOUSANDS)
SPACE AND GROUND NETWORK, COMUNICATIONS AND DATA SYSTEMS	JET PROPULSION LABORATORY LOCATION 5512-GO. 930016	GROUND COMMUNICATION OPERATIONAL SYSTEMS-MOOCOMP 97XX PROCESSORS & PERIPHERAL EQU PMENT	COMMUNICATIONS AND DATA SYSTEMS	800.0
SPACE AND GROUND NETWORK. COMMUNICATIONS AND DATA SYSTEMS	JET PROPULSION LABORATORY LOCATION 5512-NO. 930024	NETWORK OPERATIONS CONTROL CENTER-OSP SPLIT STRING HARDWARE	GROUND NETWORK	483.0
SPACE AND GROUND NETWORK, COMMUNICATIONS AND DATA SYSTEMS	JET PROPULSION LABORATORY LOCATION 5500- . 940020	JPL - ADP ACTIVITY-LAN HARDWARE FOR SPC UPGRADE	GROUND NETWORK	375.0
SPACE AND GROUND NETWORK, COMMUNICATIONS AND OATA SYSTEMS	JET PROPULSION LABORATORY LOCATION 5512-CN. 940028	COMMUNICATIONS AND NETWORK EOUIPMEMT-DIGITAL VOICE EOUIPMENT	COMMUNICATIONS AND DATA SYSTEMS	1600.0
SPACE AND GROUNO NETWORK, COMMUNICATIONS AND DATA SYSTEMS	JET PROPULSION LABORATORY LOCATION 5512-GO, 940030	GROUND COMMUNICATION OPERATIONAL SYSTEMS-GCF UPGRAOE	COMMUNICATIONS AND DATA SYSTEMS	300.0
SPACE AND GROUND NETWORK, COMMUNICATIONS AND DATA SYSTEMS	MARSHALL SPACE FLIGHT CENTER LOCATION 6218-01, 940070	Program Support Communication Network-PROGRAM SUPPORT COMM NETWORK EOUIPMENT	COMMUNICATIONS AND DATA SYSTEMS	7089.0

Fiscal Year 1994 Budget Estimates